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ON STAGE

Teen-age cast members of Broadway musical, "Bye, Bye Birdie," are pictured in "Telephone Hour" scene. Using Princess telephones as their props are Louise Quick (top), Marissa Mason (right), Bob Spencer (left) and Jessica Albright (center).

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FLASHES AND PLUGS

LITERAL TRANSLATION. A woman driver made a slight miscalculation one afternoon, and her out-of-control car smashed through a fence and into 4 feet of water. Luckily, she wasn't hurt, but the car was water-logged.

Problem: How to tell her hot-tempered husband the bad news. She decided on the casual approach.

"Dear," she said that evening when her husband was well fed and comfortable, "you know that quarrel we had last week? You snapped at me and told me to go jump in the lake. Well, I did it today."

"What!"

"Yes, I did. Oh, and by the way, I took the car with me."

•

CAPTIVE AUDIENCE. An elevator operator was about to close the doors of her crowded car when a well dressed but inebriated gentleman pushed his way in.

As the car started up, he tried to turn around to face the door, but was wedged in so tightly, he couldn't move.

The other passengers stared into his bleary eyes with growing discomfort. Finally, when the strain became quite painful, the drunk cleared his throat and remarked, "I expect you wonder why I called this meeting."

•

WHEN IN ROME . . . A refugee couple arrived in the United States several years ago with one dream—to become citizens. One day, after years of waiting and studying, the husband rushed into the kitchen with the long-awaited news.

"Anna! Anna!" he shouted, "At last! We are Americans!"

"Fine," replied his wife as she tied her apron around him. "Now you wash the dishes."

•

FOOTCANDLE-ITIS, NO DOUBT? The Pittsburgh Pa. Testing Laboratory *News* recounts the sad plight of the technician, who laments:

"I feel lousy! The stress and strain of everyday living has practically brought me to the yield point. My blood pressure is 2500 P.S.I. and my arteries 65 Rockwell C. My swollen feet are 10 foot pounds overweight.

"And my doctor says, 'Relax. All you need is a little exercise and some pills. Take one iridium capsule with each meal and do about a dozen side bends before retiring. If you don't feel better by Friday, come back. I'll give you a hydro-static.'

"But I still feel pooped. I wouldn't be surprised if I come down with intergranular corrosion."

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

November 26, 1960

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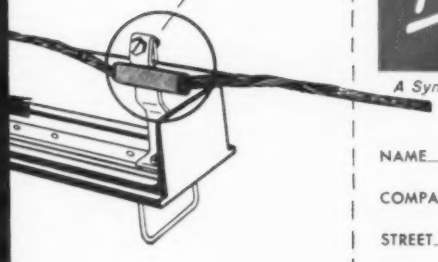

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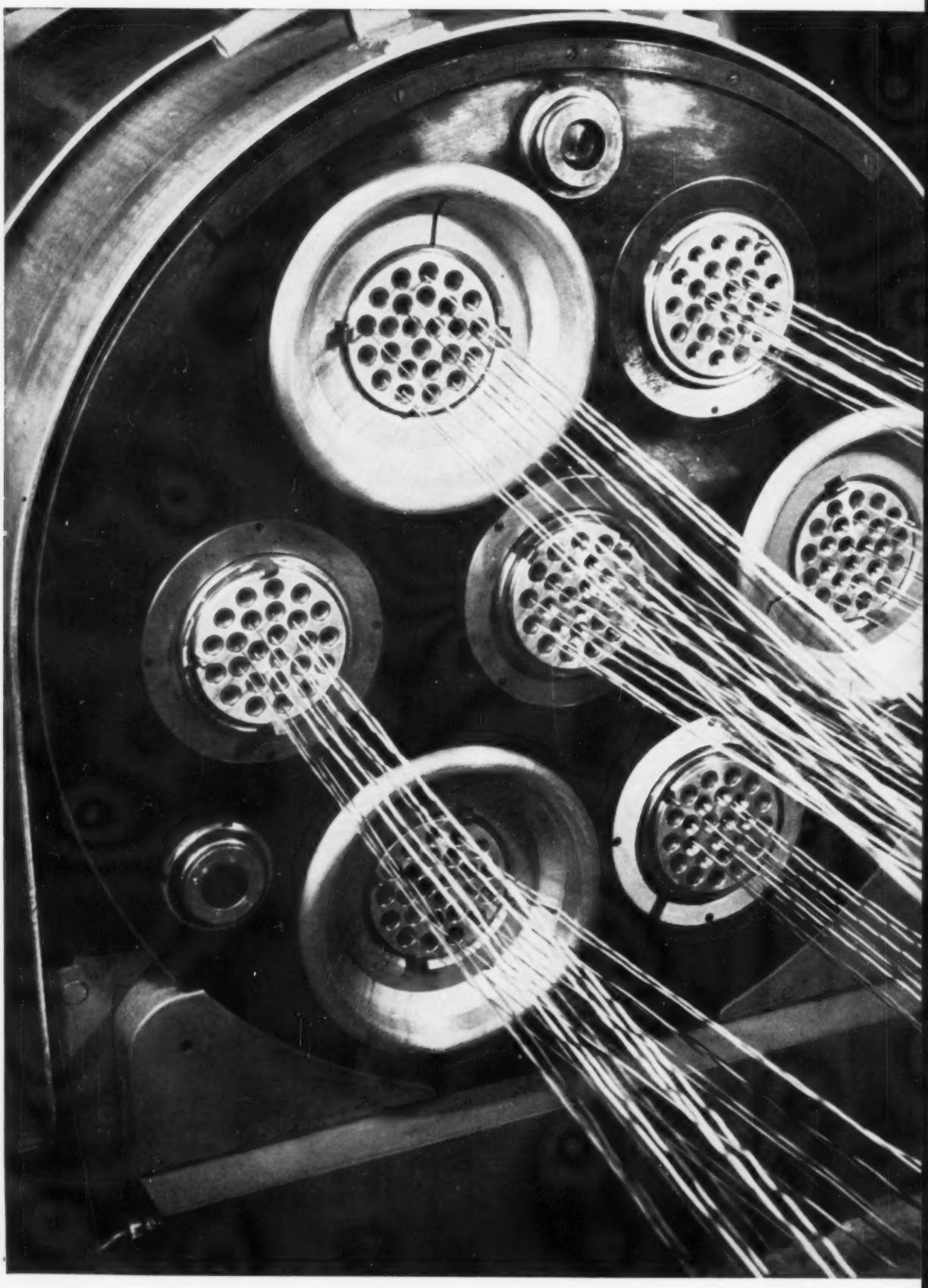

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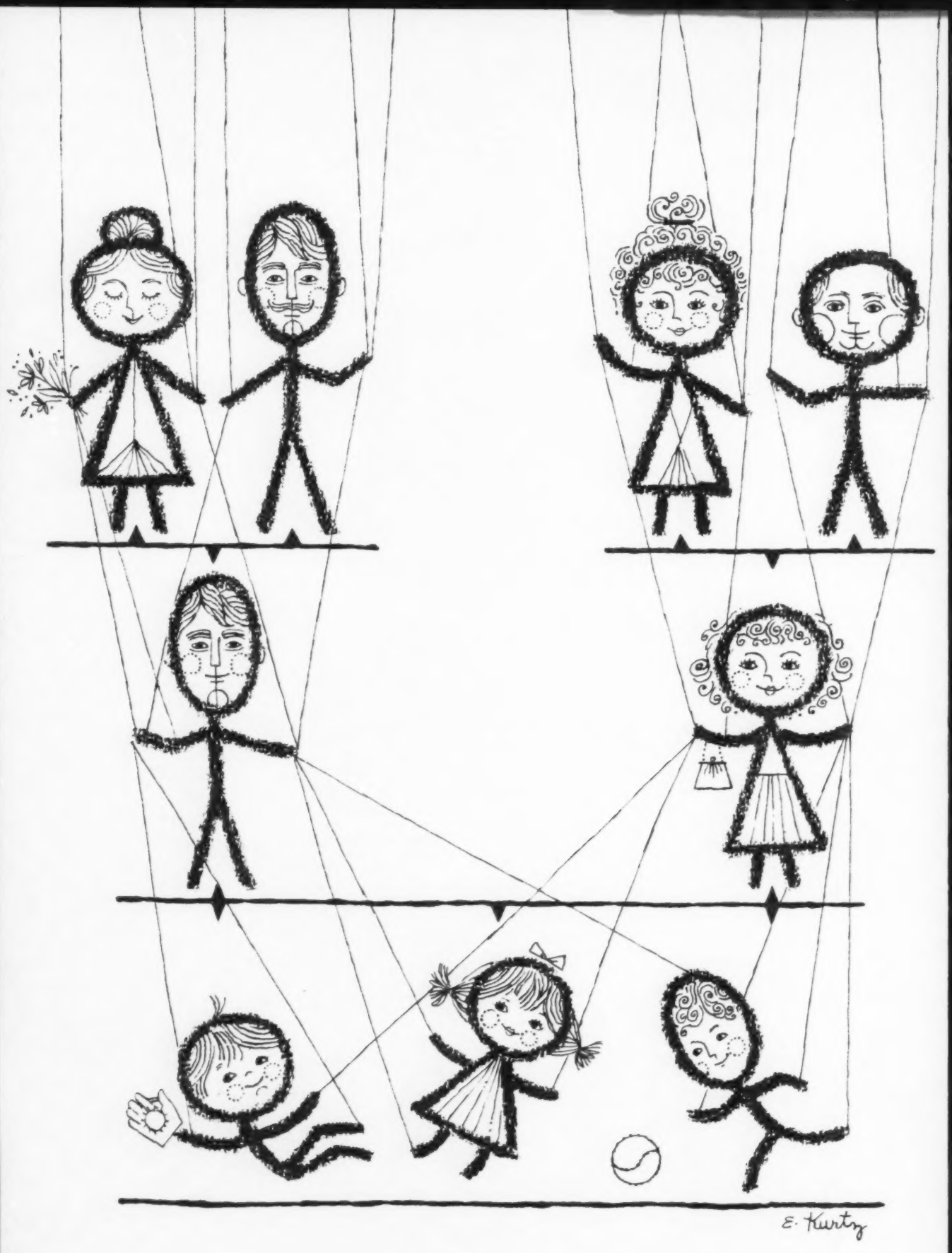
E. Kurtz

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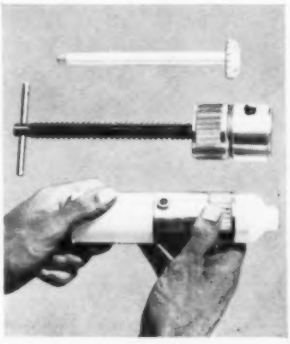
(Patent No. 2,838,210. Others Pending)



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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

Kennedy names James M. Landis to study federal regulatory commissions and make report. U. S. Supreme Court protects right of government agency to keep business reports confidential from other bureaus. Alabama court orders commission to give weight to cost of reproduction in six-year-old Bell rate case.

IF THE PUBLIC utility industries and the commissions which regulate them had any idea that national excitement over the election campaigns and the change of administrations would give them even a brief holiday from public attention, they were quickly disillusioned. Barely two days after the election, while belated returns were still coming in from doubtful see-sawing states, such as California and Hawaii, President-Elect Kennedy, at his first post-election press conference, announced the appointment of a regulatory adviser to report to him on what is wrong with these federal agencies and their procedures.

Fortunately, the expert selected by Kennedy is a well-known figure with a good, long, practical background in regulation. The man selected to do this job and make a final report in the remarkably short time of one month, is James M. Landis. The naming of Landis as the authority to advise the President-Elect on regulatory commissions may not excite any rejoicing on the part of those in the commercial airline industry who disagreed with his policy on that tribunal. It may not enthuse those who disagreed with Landis' judgment as a special commissioner on whether Harry Bridges should have been deported years ago as a trouble-making communistic maritime labor leader. (Bridges is still with us.)

But it must be conceded that Landis does know his regulation, and knows it well. As the former dean of Harvard Law School, Landis served on the original Securities & Exchange Commission (SEC) when it was first set up in 1933 under the chairmanship of Joseph P. Kennedy, father of the President-Elect. Landis later succeeded Joseph Kennedy as chairman of the SEC and then switched to become chairman of the Civil Aeronautics Board (CAB). He was a strict regulationist at all times. Yet his practical experience with the way these commissions must be operated should certainly prevent Landis from making any foolhardy or drastic recommendation which might hamstring the federal regulatory commissions.

It could have easily been otherwise, if President-Elect Kennedy had chosen a congressman or professor or somebody else without an actual regulatory background to advise on reforming the commissions. When we stop to consider the wide range of criticism and suggestion about these regulatory agencies which has flowed for two years from the disclosures of the House Legislative Oversight Sub-committee, we can easily see that well-meaning reformers, without practical experience, might be tempted to suggest rash things. This writer predicts that Landis will not make any suggestion for reasons to be presently disclosed.

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Incidentally, Landis became a business associate of the elder Kennedy when he left government service and his law firm still represents Kennedy interests on various matters. So, it is reasonable to suppose that the younger Kennedy, growing up in an atmosphere of familiarity with the ideas of both his father and Landis in the field of regulation, would naturally draw on this background when he wanted help or advice on what to do about these agencies.

From the prompt way he moved into this area it can also be presumed that the President-Elect is concerned about the operation of the regulatory agencies and wants to do something about it at an early date. Furthermore, the fact that Landis has a deadline of Dec. 15 for making a report to the President-Elect would indicate that Landis has been working on it for some time, long before the election.

Landis' Bar Speech

This latter supposition is borne out by the fact Landis himself made a fairly comprehensive disclosure of his thinking about the shortcomings of regulation, in a speech at Washington, D. C., on Aug. 29. This speech was made during the annual convention of the American Bar Association to a group mostly composed of government lawyers, and known as the Section of Administrative Law. Because of the specialized nature of these proceedings, the Landis talk did not get much publicity at the time. But it is being read

very carefully these days for what it may forecast about the forthcoming report of Landis to President-Elect Kennedy.

And what does Landis think about the regulatory agencies and their shortcomings? Well, first of all it should be reassuring to know that Landis is neither "a friend nor a foe" of the administrative process by which the regulatory commissions function. He takes this for granted and assumes that any reformatory effort should be made in the direction of improving the process rather than supplanting it or doing away with it. He said, in his speech in Washington last summer: "Today it (administrative process) is inextricably woven into our way of life and it promises to grow rather than diminish." He feels that new areas of government controls, such as civil rights, will have to be brought under the administrative process.

Here are a half-dozen specific points which Landis favored in his speech to the American Bar Association last summer, and which he probably still favors and will so recommend to the President-Elect:

(1) *Opinion Writing.* Landis does not think much of opinion-writing machines, such as have come into fashion in recent years, whereby a division of a regulatory commission grinds out an anonymous generalized version of the commission's rulings, holdings and findings. Instead he favors "imposing the responsibility for a reasoned opinion upon an individual member of an administrative agency." In other words, he wants a commissioner to sign an opinion if he is writing for the majority, just as he would do if he were writing an individual dissent.

(2) *Rules of Evidence.* Landis would tighten the rules of evidence in administrative proceedings so as to cut down the size of the record and length of the hearings and over-all process. At the same time, tighter rules would tend to cut the cost of such proceedings, which now may include "material of substantially no probative value at a dollar or so a page," which has become so voluminous that nobody reads it. Note, however, that Landis would *not* put the regulatory agencies in the strait jackets of requiring them to abide by the legalistic courtroom rules of evidence used in jury trials.

(3) *Limiting the Lawyers.* As a lawyer himself, Landis obviously thinks lawyers talk too much. He does not want to shut off any sincere or proper argument, but he thinks that much of the delay which causes cases to run for five or 10 years is due to a combination of long-winded arguments and delaying tactics by counsel. He blames both sides—both government and regulated industry. He points out that government counsel is often not content to prove his case, but insists on proving it four times over. Industry counsel, he thinks, tends to stall when it is to the advantage of business clients.

(4) *Hearing Examiners.* Landis would increase the authority of the hearing examiners, giving them greater powers to throw unnecessary stuff out of the record. In this manner, also, the duplication and delay resulting from virtually automatic right of appeal from an examiner's opinion to the full commission could be corrected or held within bounds.

(5) *Improving the Commissions.* Because he believes in commission regulation, Landis is in favor of improving them by strengthening their membership. He thinks appointees to commissions ought to have some background related to the "responsibilities to be assumed." Without such background he feels "the claim to expertise has slight merit." This does not mean that all commissioners should necessarily be lawyers, engineers, or professional specialists. But neither does it mean that the commission should be a dumping ground for political hacks, lame ducks, etc.

Landis did not spell this out so bluntly, but one can read between the lines. He also condemned short tenure and the rapid turnover which is posing a serious problem at the top levels of our administrative agencies. He seems to favor career appointments on the theory that the job of commissioner should be the cap stone, not the stepping stone, to some other career.

(6) *Creative Thinking.* Most of all, Landis thinks that the commissioners ought to exercise some leadership in the regulatory control of industries placed under their charge. Instead of sitting back and deciding cases brought before them as a matter of docket routine, he thinks the commissioners ought to exercise the responsibility of over-all thinking about the progress of regulated industry. He expressed disappointment over the failure of regulations to coordinate the various aspects of transportation.

Just how much of the foregoing will find its way into the forthcoming Landis report to President-Elect Kennedy is sheer speculation. It is likely, however, that Kennedy has given a top priority to regulatory reform and intends to move swiftly in the next Congress for legislation in that area. Furthermore, the new President will probably be in a position to get just about what he wants, within reason, if he throws his full influence behind such legislative proposals. This is not to say

Microfilms of TELEPHONY Volumes Available to Subscribers

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Only *subscribers* to TELEPHONY are eligible to purchase the microfilms. Microfilms for Volumes 154 and 155 (covering the full year of 1958) and Volumes 156 and 157 (for 1959) are now available. The microfilm covering 1958 is priced at $11.15 and price of the film for 1959 is $11.25.

Orders for films covering 1958 and 1959, as well as subscriptions for films for subsequent years, may be placed with University Microfilms, Inc., 313 N. First St., Ann Arbor, Mich. The films will be furnished about six months following the end of the year covered. Before filling film orders, University Microfilms will check with TELEPHONY to ascertain if those ordering are bona fide subscribers.

that the next Congress will be a rubber stamp Congress. It certainly will not be any such thing, as the new President will soon find out.

But in this particular field, of regulatory reform, there really is not much crystallized opposition. In fact, there really is not much confirmed impression one way or the other among the total membership of the Congress. So, if President-Elect Kennedy, next January, arrives on the scene with some well-formulated proposals for overhauling the regulatory commissions—especially the big six, which includes the Federal Communications Commission, there probably won't be much opposition on either side of the aisle.

Confidential Business Reports

Two weeks ago in this department (TELEPHONY, Nov. 12) mention was made of a case before the U. S. Supreme Court to determine whether business organizations which prepare statistical material and other data for one government agency have a right to expect that such information will be kept confidential from other government agencies. Since that item was written, the U. S. Supreme Court has decided, without opinion, in favor of protecting the confidential nature of business communications with all government agencies, under circumstances where such protection may be reasonably expected.

In other words, the U. S. Supreme Court has now agreed with a lower court's ruling that the government should keep its word as to the confidential nature of business data prepared for a federal agency. The highest court, therefore, declined to review a decision denying the Federal Trade Commission access to the Census Bureau's confidential information.

Under the lower court ruling (which now becomes law), individual census reports cannot be used for purposes of taxation, regulation, or investigation; neither can they be furnished to any other agency of the government. Not even an executive order can pry loose this information which has been made confidential by an act of Congress.

It was the Federal Trade Commission which contended that it has the authority to require interstate corporations, in this case the Beatrice Foods Co. of Chicago, to answer questions about their business operations. Since the Census Bureau already has it, the FTC felt that it would be wasteful and time-consuming to try to elicit the

(Continued on page 52)

REA OK's Loans Totaling $4,670,000

Four telephone loans approved by the Rural Electrification Administration during the week of Nov. 7 will help provide new or improved telephone service as follows:

United Utilities of West Virginia, Inc., Davis; $1,049,000; Nov. 7.

This loan will aid in improving service for 199 subscribers and in furnishing initial service for 1,565 subscribers. The existing subscribers now receive common battery service from the Clay Citizens Telephone Co. which the borrower plans to acquire with its own funds. In addition, the borrower proposes to acquire the Pittston-Clinchfield Line in the Widen community, and 4 miles of line from the Chesapeake & Potomac Telephone Co. of West Virginia in the Birch River area.

New construction planned to serve the expanded system includes dial central offices at Birch River, Clay-Ivydale, Newton and Widen. The Clay central office building also will house commercial office facilities. Construction is presently under way prior to REA approval in the Clay exchange. The borrower will be reimbursed for the improvement of these facilities. REA loans to this borrower will assist in providing new and improved service to 6,676 subscribers. Three of the proposed 11 exchanges are now in operation.

•

Texas Telephone & Telegraph Co., Corsicana, (mailing address: 4001 Westheimer, Houston 27); $1,550,000; Nov. 8.

These funds will help enable the company to complete the authorized system and to construct adequate headquarters facilities to serve the entire system. The borrower has completed construction of 29 of its proposed 48 central offices and is now providing dial service to approximately 8,200 subscribers.

On completion of the system provided for with the aid of two REA loans, the borrower will be serving 14,620 subscribers. In order to facilitate operations, the borrower's system has been divided into five districts—Northern, Eastern, Western, Southern and Central.

•

The United Telephone Co., St. Marys, W. Va.; $1,325,000; Nov. 8.

This loan will assist in furnishing initial service for 1,432 subscribers and in improving service for 968 subscribers. The borrower has recently acquired the Wallace-Sardis Telephone Co., Wallace, and the Grantsville Citizens Telephone Co., which now furnish magneto and common battery service to the existing subscribers through exchanges at Arnoldsburg, Grantsville, Sardis and Wallace. Provision is made in this loan to reimburse the borrower for the acquisitions.

The United company proposes to construct a new combined dial central-commercial office building at Grantsville, and to replace the Arnoldsburg, Sardis and Wallace facilities with new dial central offices. REA loans to this borrower will help it to furnish new and improved service to 4,542 subscribers. When complete, the system will consist of five exchanges.

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The Mt. Vernon Telephone Co., Verona, Wis.; $746,000; Nov. 8.

Funds will aid in improving service for 1,850 subscribers and in furnishing initial service to 413 subscribers. This new borrower of REA funds now serves the existing subscribers through dial exchanges at Verona and Mt. Vernon, and common battery and magneto facilities at New Glarus.

The borrower plans to construct a new dial office at New Glarus to replace the central office facilities there. The Verona and Mt. Vernon dial offices will be retained and the dial facilities enlarged to handle the additional subscribers. A portion of these funds will be used to refinance the borrower's existing indebtedness incurred by partially modernizing the present system.

Ernest F. Gilden is both president and manager of the Mt. Vernon company.

Toll Line Spans Sierra Nevadas

By E. J. MORRISON*

IN NOVEMBER, 1959, the California Interstate Telephone Co. added to its toll line network by cutting into service 52 miles of new toll line between Inyokern and Kernville, in Kern County, California.

While the general engineering problems were similar to those of any toll lead, the variety of terrain and anticipated severe climatic conditions established need for a wide safety margin in its design and construction.

The preliminary survey was started in the Spring of 1959 to select a route for the construction of the proposed pole line. When this phase was finished, the actual staking of the pole locations and the right-of-way was started and completed in approximately three months.

The line was constructed in a southwesterly direction, across the desert known as Indian Wells Valley, from Inyokern on the western edge of the Majave Desert. Then the line abruptly climbs the southeastern slope of the Sierra Nevada Range, crossing it at the mile-high Walker Pass. After crossing the South Fork of the Kern River, the line parallels the river through Weldon Valley and the farming communities of Onyx and Weldon, and then through the scenic Lake Isabella area. On its final leg, the line swings northward through Hot Springs Valley to Kernville, known in Gold Rush days as Whiskey Flat and today as the center of a picturesque recreational area on the western slope of the High Sierras.

Connecting with the company's main system of toll and microwave networks

*Mr. Morrison is Outside Plant Engineer of California Interstate Telephone Co. of Victorville, Calif.

Line crossing Canebrake Creek area on western slope of Walker Pass.

—the majority of which run in a north-south direction—the new toll line is constructed over terrain which includes desert, meadow, and heavily-timbered mountain regions. Weather conditions are also extremely varied. In parts, the temperature may reach 110 degrees during the summer, dropping to around zero during the winter. High velocity winds in the spring and heavy sleet and ice loading during the winter pose problems.

Previous experience has shown the company that solutions to such problems have been obtained by designing and building a high-strength lead having excellent transmission characteristics with Copperweld line wine. Accordingly, after aerial surveys and engineering determination of the terrain, assumed storm loading and other conditions, construction utilizing this wire was begun. The entire project was completed in one year.

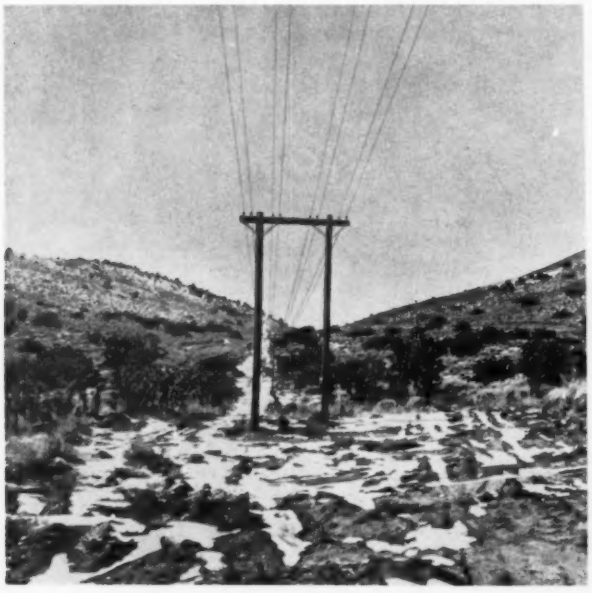
The line was constructed with 25-foot and 30-foot full-treated, Class 5 poles on the strength of past experience in this general area; and life expectancies of 30 years or more are anticipated. The severe climatic conditions coupled with transmission and economic requirements made it desirable to establish spans of 309 feet in light loading areas below 3,000 feet, and 154.5 feet in the heavy loading areas above this elevation.

"H" fixtures were placed at intervals of one-half mile for storm-guying purposes.

The crossarms used are commonly known as the W-8-24, providing eight inches separation between wires and 24 inches between circuits. On these were placed four pairs of .104-inch, 40 per cent high-strength Copperweld line wire, 0-1 transposed on point transposition brackets for a 150-kilocycle operation. This transposition scheme is capable of providing 64 voice and carrier circuits over the four pairs of con-

(Continued on page 59)

Section of line entering cattle grazing valley south of Kernville.



LEFT: "H" fixture near summit of Walker Pass. RIGHT: Line crossing range west of Weldon.

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

A 90-foot pole, weighing approximately 7,000 pounds, was set by helicopter at Fort Benning, Ga., recently. This pole, with a 24-inch butt, was lifted by a sling attached beneath an H-37 helicopter and eased into a hole 28 inches in diameter and 14 feet deep. Only 15 minutes elapsed, from the time the cable was attached to the hovering helicopter, until it was released.

A man inside the helicopter knelt beside a small, round access emergency door in the center of the floor, watching the pole and crew chief on the ground. He relayed what he saw to the pilots, using the aircraft's intercom system.

The helicopter hovered 10 feet above the top of the pole, as it lay on the ground 20 yards from the hole in which it was to be set. The sling, suspended beneath the helicopter, was attached to the pole near the top. The helicopter rose, easily lifting the pole until it stood erect.

Rising further, the aircraft lifted the pole 10 feet above the ground. Then, the helicopter, carrying the pole, started its approach toward the hole. The pole oscillated slightly, as the aircraft maneuvered to place the butt directly over the hole.

The signal was then given to lower the pole. It approached the hole slowly, touching first one side, and then the other, before starting its 14-foot descent into the hole. Halfway down, the pole stuck in the hole, but was released by turning with a canthook.

When the pole was in place, the helicopter continued to hold it, until the ground crew attached guys to anchors to hold the pole in a vertical position. Then, on signal, the pilot pressed an automatic cargo release button, and the pole stood alone.

In discussing this job, Capt. Martin R. Hunsucker, communications officer of the Infanty Center Signal Section, stated that special preparation is necessary when erecting poles by this method.

First, the hole should not be less than twice—and preferably three times—the butt diameter of the pole. Moreover, the hole should be deep enough to permit the pole to stand alone after being released by the helicopter. Further, a funnel-shaped trench should lead to the hole. The helicopter can then drag the pole at right angles to the trench, until the butt slips into it, and then move it into the hole.

Setting poles by helicopter is not new, as various telephone companies have made use of this method on a limited scale for several years. This is the first time, however, to our knowledge, that a 90-foot pole, weighing approximately 7,000 pounds, has been set by a helicopter.

•

The writer travels the same route by car several times each year. A few years ago, this route was paralleled by a pole line supporting two bracket circuits of open wire. Later, the bracket circuits were replaced by a crossarm of open wire and then two crossarms. After that, the open wire was replaced by aerial cable. Now the cable is being placed underground and a second cable added.

All this, we believe, is an actual example of how telephone service is expanding throughout the country.

•

The safety belt fad for automobiles seems to be passing out of the picture. This is very difficult to understand, as safety authorities who have made careful studies on this subject are convinced that seat belts *do* save the lives of 70 out of every 100 accident victims. In an accident, the auto hits something and stops. Unbelted passengers keep on going, hitting the windshield, steering wheel or roof. Belted passengers stay put and in most cases, are safe.

•

It seems desirable to provide presently available automatic toll ticketing equipment on hotel PBX systems. In this way, guests could dial their toll

(Continued on page 42)

Blain's 1,000th Notebook

TELEPHONY takes pride in pointing out that this is Ray Blain's 1,000th Plant Man's Notebook. Mr. Blain's first Notebook appeared in the Feb. 15, 1941 issue.

We wish to congratulate him publicly for the wealth of information he has gathered and edited over this nearly 20-year span—not only for his Notebook, but also his treatment of technical subjects and his annual reviews of new developments.

MICROWAVE CONSIDERATION

IN AN earlier article (TELEPHONY, July 30), a discussion was presented on a recently developed microwave package known as the TJ system.

The article, based on a presentation appearing in the *Bell Laboratories Record* and authored by C. L. Ruthroff and L. C. Tillatson, described the TJ system as one developed for short-haul transmission of stacked multiplex signals, television signals, or other forms of broadband communication signals, and operating in the 11-kilomegacycle band. It also discussed some of the design considerations that went into the development of this system.

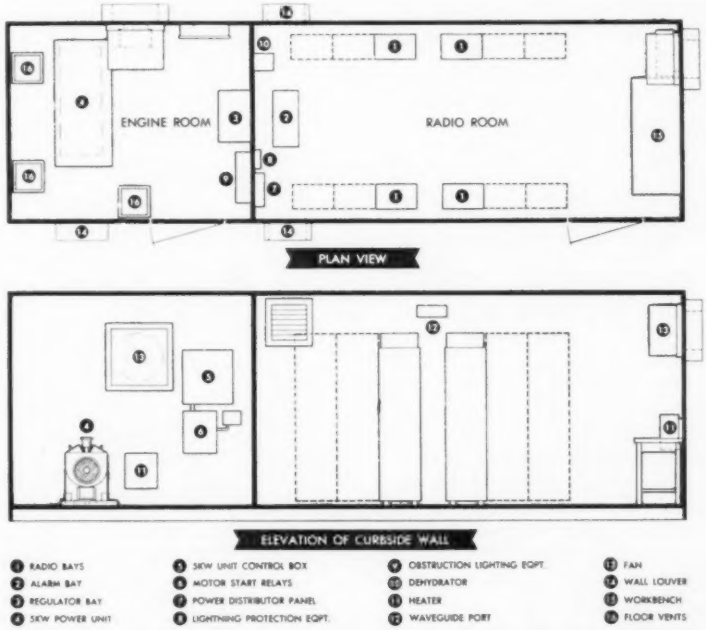
J. W. Holliday has recently authored a discussion, also appearing in the *Bell Laboratories Record*, describing "Packaged Buildings for TJ Microwave Systems." Because many operating companies are now utilizing microwave and many others are considering its use, it is worthwhile to review the comments Mr. Holliday presented.

Many microwave repeater stations may be expected to be installed at out-of-the-way locations; such locations as in the middle of a desert or atop a mountain. To haul all material piecemeal to a site of this nature and assemble would be quite costly. Conditions of this nature have been dealt with by obtaining a package building complete with all gear. This is the basis for Mr. Holliday's discussion.

It was explained that the transportable building, fabricated by Freuhauf Trailer Co., is essentially a trailer-truck body having no chassis or wheels. Two doors in the side of the body and a center partition provide two rooms—one for the power equipment and the other for the radio equipment. The partition also offers fire protection between the radio equipment and the gasoline engine in the power room (see illustration).

Because packaged buildings may be installed in places where many varieties of weather conditions prevail, provisions were made to control heating and ventilation. Thermostatically controlled electric heaters and Fiberglas battery in the walls, ceiling, and floor make the building comfortable for maintenance personnel.

It was explained, further, that vents also installed in the floor of the power room permit escape of any dangerous gases from possible carburetor leakage.



Floor plan and overall detail of packaged building for TJ microwave system. Power and radio equipments are housed in separate rooms with individual entrances.—Bell Laboratories Record drawing.

Mr. Holliday, in describing the construction of the building, stated that the center wall separating the power room from the radio room gives additional support to the structure as well as providing area for mounting various alarm and control equipment. The sheet steel facing added to the power room side of this wall improves the magnetic isolation of the radio equipment.

The grounding system for the radio and power circuits is improved because of the all-metal construction of the building. Another advantage of all-metal construction is that it prevents porcupines and other pests from breaking in and possibly damaging the equipment.

It was explained that in locations where excessive winds and snows are found, and where roof installation of parabolic antennas aimed at tower-mounted reflectors is required, additional building reinforcements may be necessary to reduce antenna sway.

Other considerations discussed by Mr. Holliday included causes and cures of shock and vibration. It was explained that the standby power unit is mounted on a concrete structure that extends through an opening in the floor of the power room without contact with the structure. The arrangement was made to prevent undesirable effects of vibration during the time the engine is in operation.

Shock and vibration mounts were placed under the radio bays and at the wall fastenings at the rear of the bays.

In addition to these considerations, various fittings and modifications are required for loading and unloading of the fabricated structure.

In any project, there is a consideration of practicability and economy. This discussion centered on these two factors as related to a microwave installation. Perhaps a pre-fabricated package rather than a piecemeal installation is your solution. Its consideration may be worthwhile.

NEW VACUUM TUBE DESIGN

THE UPGRADING of design features of several models of current relays and switch mounts made by Jennings Radio Mfg. Co. has been made possible through the use of epoxy glass tubing for insulating and mechanical components, it was recently disclosed.

The tubing, Phenolite grade G-11-3681 epoxy-resin-bonded, glass-fabric-base material, is manufactured by National Vulcanized Fibre Co. It is now used in place of solid phenolic rod as an insulation between high and low voltage points. It is said to be lighter than phenolic rod, yet equal to or more improved due to its mechanical and electrical properties.

Epoxy glass tubing is used in this vacuum relay as an insulating link to connect a solenoid shaft to a vacuum switch shaft. It is being used by Jennings Radio Mfg. Co. to upgrade design features of overcurrent relays and switch mounts.

In application, the new tubing may be used for standoff posts, insulating actuating links, and in an experimental unit as an insulating casing.

NEW STANDARD OF LENGTH

ON Oct. 14, 1960, the world adopted a new international standard of length, a wavelength of light, replacing the meter bar, a standard for over 70 years. The announcement was made by Dr. Allen V. Astin, director of the National Bureau of Standards.

The new standard of length for the meter is 1,650,763.73 wavelengths of the orange-red line of krypton 86 and will replace the old platinum-iridium meter bar which has been maintained at Paris as an international standard of length.

While not of great concern to the ordinary technician, the action is of great concern to those engaged in precision measurement in science and industry.

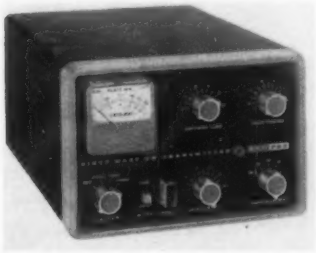
For several decades, the standard of length was kept in Paris. Duplicated standards necessarily had to be returned to Paris for recalibration. With the new standard, reproductions can be produced with great accuracy in any well-equipped laboratory.

It was stated, "This new definition of the meter will not materially change the measurement of length nor in any way the relation between the English and metric units."

ATTENTION HAMS!

ELECTRONIC Instrument Co., Inc. (EICO) has announced the development of a new 60-watt CW transmitter.

The new transmitter, model 723, is said to be available either as a kit or factory wired. While ideal for the novice licensee, the advanced ham will find the transmitter a desirable low power standby rig.



EICO Model 723 60-watt CW transmitter.

It was stated that the entire unit is mounted on a copperplated chassis with a solid die-cast bezel providing a tight fit between panel and chassis. Weight is approximately 15 pounds.

Features are said to include: a one-knob bandswitch covering 80, 40, 20, 15, and 10 meters and a one-knob off-standby-tune-transmit switch; a panel meter which can be switched into either grid or plate circuit of the final; a modulator/accessory socket for modulator input, antenna relay, VFO power take-off, and emergency power input.

SPEED MAIL

STROMBERG-CARLSON, a division of General Dynamics Corp., and Haloid Xerox, Inc., have announced the development of a high speed, electronic reading and printing system which permits transmission of mail from one city to another in a matter of seconds.

Pictured above are the S-C 6400 Scanner and S-C 6000 Facsimile Printer developed by Stromberg-Carlson and Haloid Xerox, Inc. The two units installed many miles distant permit mail to be transmitted in a matter of seconds.

It was explained that in this method of facsimile transmission of mail, a letter is first placed before an electronic scanner which sends an image signal over standard TV or microwave communication links to a distant point where the printing equipments effect exacting reproduction.

In order to insure secrecy of the mails, automatic opening of special mailing forms is accomplished by suitable machine. The machinery to insure the necessary secrecy is being developed by Pitney-Bowes, Inc.

The scanner operates by sweeping a minute spot of light across the face of a cathode-ray tube 360 times per second. The spot of light is focused on the letter being transmitted as the letter moves along a conveyor belt. The light is then reflected and picked up by a photo-multiplier tube which puts out a voltage proportional to the reflected light. Since the light is reflected more from light areas of the paper than from the dark, a varying signal results.

A similar cathode-ray tube in the printer at the receiving end is synchronized with the scanner. Since the spot of light emitted by this tube is modulated by the voltage output from the photo-multiplier, this varying light source is used to produce the transmitted image on the light-sensitive, electrostatically charged surface of a rotating xerographic drum.

It was explained that 15 standard letter-size pages per minute are transmitted on the machines. This is said to be, "400 times faster than the facilities of the major press associations for transmitting pictures."

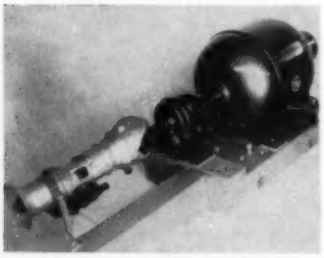
Intelex Systems, Inc., a subsidiary of International Telephone & Telegraph Corp., is the system's manager for the Speed Mail program.

EMERGENCY POWER

QUITE OFTEN it becomes necessary to provide a source of emergency power to take over in case of a primary power failure. The size of these emergency power supplies varies from a capacity of a portion of a kilowatt to those capable of supplying several hundreds or even thousands of kilowatts. Many telephone companies incorporate these standby power sources to actuate equipments during prime outages.

An emergency industrial gas turbine-generator unit, General Electric model 720, will be installed at the Oakland, Cal. exchange of Pacific Telephone & Telegraph Co. General Electric, in making the announcement, disclosed that the generator will be delivered in January 1961.

The new 750-kilowatt supply will be mounted on the roof of their exchange. Selection of a gas turbine generator was influenced partly by the roof-mounting capability.



Scale model of the model 720 gas turbine-generator unit developed by General Electric and being installed by Pacific T&T as an emergency source of power. Left is Model 720 industrial turbine and at right is the 750-kilowatt, 4,160-volt synchronous motor.

The generator set is said to weigh only 12,235 pounds compared to 43,100 pounds for its diesel generator counterpart, a considerable difference in weight.

Specifications for this ac synchronous generator are said to call for a continuous 750-kw., 4,160-volt output and the capability of providing for an 825-kw. overload.

AUTOMATIC TAPE DEGAUSSER

AN AUTOMATIC tape degausser capable of erasing reeled magnetic tape to a nominal 90 db below saturation level has been developed by the DataTape Division of Consolidated Electrodynamics Corp., CEC, a subsidiary of Bell & Howell Co.

Consolidated Electrodynamics Corp.'s new TD-2903 Automatic Tape Degausser.

The performance ratings were said to have been determined by erasing a previously recorded saturated signal of 15 kilocycles and playing back the residual signal through a filter having a band pass of ±30 cycles per second.

It was specified that the equipment, Type TD-2903, will accommodate tape widths from ¼ inch to 2-inch television tapes on reels 7 to 14 inches in diameter. Hub adapters are available for use with reels having dimensions other than NARTB (National Association Radio-TV Broadcasters) standards.

Specifications also include automatic time cycling of reels through the degausser's magnetic field to assure uniform erasing; operation from 117 volts ac-60 c.p.s. at approximately 20 amperes; full electrical protection; weight of approximately 90 pounds, and dimensions: width, 16 inches; height, 15 inches; depth, 22 inches.

ULTRA-VIOLET COMMUNICATIONS

A NEW communication system that permits as many as 100 conversations to be transmitted via a beam of invisible ultra-violet light has been developed by International Telephone & Telegraph Corp.

Unlike earlier light transmission which is limited to single channels using low-frequency waves, the ITT project development is said to satisfactorily handle many messages simultaneously operating with high frequencies. Depending on particular requirements, the units can handle almost any information from any source including teleprinters, tape readers, computers, voice and telemetry systems.

ITT Laboratories project engineer Frederick Beisel points out: "Where a security problem exists, such as in military communications, invisible ultra-violet light can be transmitted to insure secrecy. The reliability, vital to military needs, is also safeguarded since there is relatively little local interference, an obstacle

to present short-range radio systems."

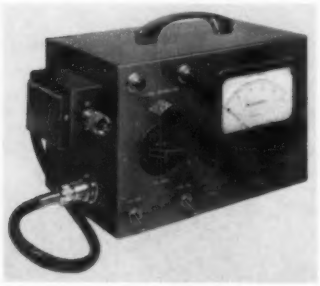
Possible military applications would be certain to include air-to-air and air-to-ground uses where local interference is often a problem.

In inaugurating the nation's first automatic post office, a prototype model was used to direct the mail processing machinery into operation. This operation was performed by installation of a special microphone at a distant transmitter where the voice of Mrs. Arthur E. Summerfield, wife of the postmaster general, was used to modulate the invisible light beam. Upon reception of this transmitted wave, voice was transmuted to electronic impulses. These signals in turn commanded the machinery.

RANDOM-NOISE GENERATOR

A NEW, reasonably-priced, random-noise generator has been developed recently by Gonset Division, Young Spring & Wire Corp.

Operating in the VHF range, the new generator is said to provide direct readings of sufficient accuracy for average laboratory use.



Random-noise generator developed by Gonset Division, Young Spring & Wire Corp. Operating in the VHF range, the new generator provides direct readings of sufficient accuracy for average laboratory use.

Specifications covering the equipment include those of providing direct readings to 25 db into 50-ohm impedances. The large-scale, panel-mounted meter facilitates accurate reading of low noise figures.

Rapid checking also is expedited by a switch mounted on the panel which may be used to cut off diode current without the need of changing filament voltage settings. A self-contained power source operates from standard commercial line voltages of 117 volts ac.

Advertisement

How To Get Your Money's Worth From Electronic Equipment!

THE TELEPHONE industry is rapidly taking advantage of new developments in electronics. This is only natural. Since the telephone first came into existence, telephone men have been quick to recognize the value of new developments.

Thus it is not surprising that the industry is using more and more electronic equipment. Mobile radio is used to connect telephones in cars, trucks and other vehicles. Microwave relay links are used in place of wire and cable in many places. Electronic carrier

Carl E. Smith, E. E., President Cleveland Institute of Electronics

circuits and repeaters result in better utilization of existing (and proposed) facilities.

All of these improvements are available today. Tomorrow will see even greater advances. The manufacturers of telephone equipment can be relied upon to give you the kind of equipment you need to fulfill your obligations to your subscribers.

However, you should keep in mind a fundamental principle of management . . . a chain is only as strong as its weakest link. Thus, no matter how big or small you may be, your equipment will not give maximum performance unless it is maintained by competent technicians.

Every company has a technical staff. It may consist of hundreds or perhaps thousands of men . . . or there may be only two or three. These men know and understand telephone technology as it used to be, but in all honesty, do they understand the fundamentals of electronic circuitry?

If they aren't on speaking terms with oscillators . . . rectifiers . . . amplifiers . . . transistors . . . etc., they are not going to be able to give you the technical support you need. A man may be able to wire a central office switchboard in the dark, but if he isn't skilled in the mental tools of electronics, your new equipment will not give you the service you paid for.

In all probability your present staff is very capable. You wouldn't have one which didn't give you the reliability you must have. Therefore they are the logical men to take on the maintenance of electronic equipment . . . as soon as they have received a sound foundation of electronic fundamentals.

This can be done economically and without the loss of valuable man hours by a non-resident training program. Several schools offer this service. They teach your men the fundamentals of electronic circuits. Then, with the ability to understand the principles of any electronic device, your company and the equipment manufacturer have only to conduct a brief orientation of the specialized equipment.

This plan has been used successfully by many companies. It has helped them . . . and it can help you. It will pay you to investigate and get the facts.

For full information on schools providing training in electronic theory and FCC license preparation, write to the National Home Study Council, 1420 New York Avenue, N. W., Washington 5, D. C.

If you would like the details on our Employers Plan for training technical personnel, write to

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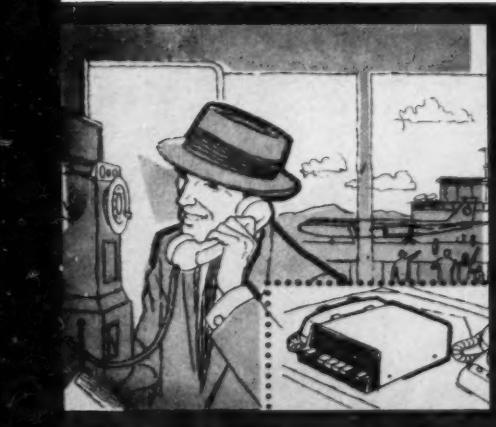
NEW REMOTE CONTROL FEATURES



RECORDING. Announces in your own voice any message up to three minutes, which you want your callers to receive. Amazing remote control signal lets you change your announcement message from any outside telephone as often as you like.

PLAYBACK. Plays back recorded messages left by callers. Remote control signal lets you (and only you) hear all recorded messages when you call in from outside telephone. Each time you signal for messages you hear only the new messages left since your last call.

DICTATION. Use CODE-A-PHONE as dictation machine in the office or from any outside telephone. Eliminates need for separate office dictation machine. Frees you from taking any dictating machine home or on business trips.

DISTRIBUTED TO THE INDEPENDENT TELEPHONE

the amazing

NEW TELEPHONE DICTATING, RECORDING AND ANSWERING MACHINE INDEPENDENTS HAVE WAITED FOR

the totally automatic

Code-a-phone®

WITH REVOLUTIONARY CODE RELAYS THAT PERMIT SUBSCRIBER TO

- TELEPHONE-IN NEW ANNOUNCEMENTS
- HEAR MESSAGES FROM OUTSIDE
- DICTATE—EVEN BY PHONE
- FILE PHONE CONVERSATIONS

NOW you can offer your subscribers a top quality telephone answering device that meets telephone company standards—and at a price everyone can afford. Unique code relay permits user (and ONLY the user) to call in new announcement messages or play back messages. Lifelike sound. Special tape cartridges can be kept on file. Models for every application, every size company.

NEW VERSATILITY

CONFERENCE CALL CIRCUITS. Records conference calls including all incoming and out-going voices. Each office using CODE-A-PHONE has an immediate tape cartridge recording of the complete conference which can be transcribed or filed for future reference.

MONITORS CALLS. Monitors incoming calls so that you may interrupt machine and talk directly with any caller. Small built-in speaker lets you hear incoming voice and your recorded announcement while you work.

TRANSMITS MESSAGES. Transmits pre-recorded message or reports to another person or distant CODE-A-PHONE. Tape cartridge provides permanent record of complete transmission.

INDUSTRY EXCLUSIVELY BY:

MANUFACTURED BY CODE-A-PHONE ELECTRONICS, INC.

ITT

FOR COMPLETE INFORMATION, WRITE TO:

KELLOGG

A Division of International Telephone & Telegraph Corp.
6650 South Cicero Avenue, Chicago 38, Ill.
Attention: Marketing Department

Protecting Our Industry Against Radioactive Fallout

By A. F. HAMMEL*

THE SUBJECT of this paper is, I am sorry to say, a rather unpleasant one. It is one which we would like to think is as far removed from our day-to-day telephone business as anything could be. But, unfortunately, we cannot, as prudent people, turn our backs to it. It has, in fact, become a part of the world we live in and could possibly overshadow in importance everything else we are discussing in this otherwise very pleasant meeting.

I am going to talk about the threat of nuclear attack upon this country and some of the effects such an attack would have upon us as a nation, as a vital industry and as individuals. I should like to consider with you a few phases of the problem that are of special interest to us in the communications business, with our responsibility for maintaining communications under any and all conditions.

Room for Optimism

But lest your spirits droop unnecessarily, let me say right now I am hopeful that the real facts of this whole situation will leave you with a more optimistic attitude rather than confirm the feeling of utter helplessness that is the usual reaction to mention of possible nuclear attack. I should like to suggest a few simple things that we can do ourselves to reinforce that optimism.

Before going further, let me give you some brief background. During the past year I have been on special assignment with the state of New York as chief of staff of the governor's committee on protection from radioactive fallout. The chairman of this committee was Keith McHugh, former president of the New York Telephone Co. He is now serving with the governor as commissioner of commerce for the state of New York.

The first requirement on this fallout job was, obviously, to find out all there is to know, both classified and unclassified, about nuclear attack and nuclear weapons. This included the effects on people and environment, defense against the weapon and ways and means of protection against it. The whole fascinating and sobering story was made available to us by the Department of Defense, Atomic Energy Commission, Office of Civil and Defense Mobilization, and other agencies. We had valuable assistance also from the National Academy of Sciences and from leading universities, individual scientists and private industries operating in the nuclear field.

We in the New York State project contributed little that was basically new in the field of nuclear protection, but we had an unprecedented opportunity to put together a complete and up-to-date picture of all the accumulated knowledge from many diverse sources. I shall draw upon this fund of factual information in presenting the story to you.

Legislative Action Considered

Incidentally, the work of the New York State committee and the governor's personal interest and participation in the undertaking generated considerable publicity, as you may have noted. There was even a bit of controversy, principally concerning the possibility of requiring radiation protection by some kind of legislative action in New York State.

The best defense against a nuclear attack on this country is, of course, to avoid having one. Everyone recognizes this basic truth, regardless of political, military or other background. Certainly much has been done and is being done in many ways—sometimes under difficulties—to head off nuclear war.

There are four major avenues of approach to avoiding the annihilation of our population by massive nuclear attack. This is the ultimate threat in this age of cold war and nuclear blackmail—annihilation of our population.

The first way is by creating and maintaining an international climate of understanding, of freedom from tensions, covetousness and suspicions, so that there is no reason or incentive for one nation to attack another. This is the long sought millennium, but as of June 1960 we certainly cannot rely on it for our safety.

Must Avoid Surprise Attack

The second means of avoiding nuclear catastrophe is to be able to block or deflect by defensive military action a nuclear attack if one should be attempted. From our American point of view this means prime attention to the element of surprise as well as specific military defenses. The communications industry is well acquainted with measures for detecting indications of attack and transmitting warning information —the Dew Line set-up, the BMEWS System, the national warning networks. We are currently deeply involved in the space programs including the man-in-space project—all of which have as a basic objective, ways and means of knowing what is going on against us and combating the element of surprise.

We in the communications field are intimately familiar also with many of the active defense measures against nuclear attack since they depend so vitally upon communications and upon our communications technologies. I refer to the SAGE system, the Nike and BOMARC projects and the national networks which give to military defense commanders split second knowledge of situations and control of counter measures.

These defense measures are massive and they are impressive. And, yet, with the continuing advances of science and the continuing leap-frogging of offensive weapon technology and defensive counter measures, there is general agreement among our experts that we cannot, at the present time, rely on being able to beat off a nuclear attack if it should be attempted.

Retaliatory Power Essential

There is a third way of avoiding nuclear attack on us and that is to discourage it by the certain knowledge that the aggressor nation would be quickly and decisively devastated by a retaliatory blow. We must have the capability to strike this blow effectively

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Mr. Hammel is Assistant Vice President of New York Telephone Co. This was an address presented before the recent convention of the New York State Telephone Association.

under any circumstances, including after the retaliatory system itself has been subjected to surprise attack. This capability we have with certainty and we must maintain it. This deterrence posture is our basic and most effective safeguard against nuclear attack—and probably will continue to be for some time to come. We may be sure that just as we have been able to carry on a broad aerial surveillance for a number of years—necessarily without public knowledge—there are other aspects of our defense and retaliatory power that would be reassuring if known to the public, but which must be protected by secrecy to be fully effective.

The President summed up our retaliatory position recently more bluntly and forcefully than is customary when he stated "there is no nation on earth that would dare attack us—and they know it."

Preparation for Attack

There is a fourth way to avoid nuclear annihilation which in a real sense backs up the other three. This is to prepare ourselves to withstand and recover from a nuclear blow if one should be made against us and should succeed in getting through despite all efforts to prevent it. Let me say right here that this is by no means a hopeless piece of wishful thinking. There are relatively simple measures that can be taken that could save the lives of many millions of Americans who would otherwise perish. By making use of knowledge now available and by devoting relatively small resources, we can definitely assure our survival as a population and as a nation. This involves, however, facing up to some hard facts but I think you will be convinced it is well worth the effort.

The best informed experts believe nuclear war is not imminent. But it could happen. The means and the capability are in being. Every now and then it becomes clear that there could come a time in one year, five years, or 10 years, when some madman in the world might miscalculate or ignore our retaliatory strength and launch an attack against us. If he succeeded and his weapons devastated us, his own certain destruction by retaliation would not help us much at that point.

But we do not need to perish even in the event a massive nuclear attack should reach us. Let's look at the facts as coldly and calmly as we can.

Attack Pattern Studied

Most experts feel that if there should be an attack it would be an all-out quick effort to bring us to our knees or to wipe us out completely. Studies have been made of all manner of attack patterns with all the possible assumptions as to enemy objectives and all the possible sizes and types of weapons. From these studies, carried on continuously using the most modern computer techniques, and from a knowledge of the effects and the limitations of nuclear weapons, certain definite conclusions may be drawn.

The ultimate aim of nuclear weapons is, I repeat, the destruction of people. The objective of nuclear defense and protection is to save the people. The destruction of people by a nuclear weapon would be in two general phases. First, in the vicinity of a nuclear detonation nearly all life would be destroyed by blast and thermal effects including induced fires and intensive nuclear radiation. With the largest weapons, this area of devastation could extend to a distance of 10 or 15 miles. In this area there seems little hope for survival. Some might be saved if they were in extremely strong blast-proof shelters deep in the ground. However, it appears just not practical to provide this kind of protection for the population generally. Furthermore, to survive, people would need to be secure in the blast shelters when the detonation occurred. With the likely warning time dwindling down to practically no time at all, this becomes less probable of accomplishment even if the super-shelters were available. We must, therefore, just about give up those unfortunate enough to be near wherever the detonations might happen to strike. The number of people thus lost immediately would depend on something that cannot be forecast—the locations of the blasts with respect to centers of population. If the weapons hit the large cities many millions would be lost immediately.

Millions Would Survive

However, many millions would survive the initial effects even in the heaviest attacks visualized. For one thing, while it is often assumed that the weapons would be aimed at and hit the cities, this may not happen. There is a school of thought, in fact, that an enemy might try to avoid destroying our major physical resources, including our cities and our industries. That he might instead attempt to preserve them for his own purposes. Also our defensive action might, to some degree, blunt the force of the attack or deflect it from the objective aiming points even if the cities were the intended targets.

In any case a great many people, possibly the great majority of the population, would still be alive following the bursts. They would be in the immensely larger geographical areas beyond the direct effect of the bursts.

However, these immediate survivors would not yet be in the clear. The danger to them would be from intensive residual radiation, particularly in the early hours and days immediately following attack. But this is where a ray of hope enters the picture. These people can protect themselves against the radiation. They can be saved just as surely as the people near the bursts would be lost. Analyses of possible attack patterns involving New York State show that from eight million to over 15 million people in this state—out of about 16½ million—could live through a nuclear war—but only if they had the simple knowledge and modest facilities needed to survive the radiation.

Real Radiation Problem

The threat of radiation would result from spreading of radioactive particles from the weapons. This material would be transported hundreds of miles by wind and weather from the detonation points. It would be deposited over city and country alike, often in the manner

(Continued on page 36)

SAFETY THUMB TACKS

By John A. Bracken

Bits of safety reasoning, either pointed or flat, depending upon the way you look at them.

•

"Being late—is more easily explained than an accident."

•

"Practicing *Safety* minimizes the opportunity for accidents."

•

"Neglecting *Safety* doesn't pay."

•

"A word of caution is always in order, play it *Safe*."

62 independent exchanges schedule SATT conversions!

62 independent telephone exchanges are scheduled to convert to Strowger Automatic Toll Ticketing. These exchanges represent 13 states and Canada (see list at right). Some of the exchanges are small; others are large multi-office networks. All of them investigated competitive makes of toll ticketing equipment. They discovered that SATT is the ideal method of handling toll calls, automatically.

SATT can help you, too!

Are you considering a conversion to automatic toll ticketing? If so, be sure to get the full facts on all makes of equipment. We think you'll discover that SATT is your best investment for the future. To start your investigation, ask for the free 8-page booklet shown at right.

number of independent exchanges scheduled for SATT conversions:

California	20
Illinois	5
Indiana	3
Michigan	12
Missouri	1
New York State	2
Nebraska	2
North Carolina	3
Ohio	2
Pennsylvania	1
Tennessee	2
Virginia	2
Wisconsin	1
Canada	6
TOTAL	62

write for FREE booklet

This free 8-page booklet explains how you can increase revenue and reduce operating costs with SATT. Explains in simple terms how a SATT system processes your toll calls. Ask for Circular 1876-A. Write Automatic Electric Sales Corporation, Northlake, Illinois. In Canada, Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16.

AUTOMATIC ELECTRIC GENERAL SYSTEM

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

of a light fall of powdery snow. Having settled on the ground, roofs and other surfaces, it would look and act usually like harmless dust or sand. But it would emit a deadly invisible radiation. This constitutes the "fallout" problem that would follow an attack.

This radiation hazard would be very real. There would be large areas with intensities such that 15 or 20 minutes unprotected exposure would be fatal. Longer exposures to lesser intensities would likewise be fatal.

Smaller dosages would result in radiation sickness, increased impact of the cancerous diseases and general shortening of the life span.

These physiological effects are caused by ionization of human tissues by radiation from fallout material deposited nearby. The air is not poisoned by radiation. It is perfectly safe to breathe provided the radioactive dust itself is not inhaled. There would be problems of avoiding ingestion of radioactive materials with food and water but they are relatively minor compared to the all important problem of staying alive until the immediate post-attack hazard had passed.

Methods for Survival

But we can do a great deal about all of this and here is why and how:

(1) The intensity of this fallout radiation declines rapidly with passage of time. After only seven hours it is down to about 10 per cent of what it was one hour after the blast. After two days it is down to one per cent. This means that the need for protection is urgent in the early period, but it also means that the need for high protection is relatively temporary.

(2) The radiation intensity diminishes rapidly also with distance from the fallout material. This means that even a few hundred feet away the exposure is reduced below the danger point.

(3) People can be protected from the radiation by shielding composed of very common materials. A sufficient mass of substances such as earth or concrete does the job very effectively.

(4) In areas far enough from the detonation that people survive, there is time to seek shelter from the radiation before the fallout material descends from the skies. A minimum interval of one hour following the burst is anticipated. In the farther away places the fallout might not arrive for several hours.

Shielding Recommended

These facts represent the basic opportunities for survival. The way to take advantage of these opportunities is—know a few simple essentials about the character and behavior of fallout radiation—have or find a place of shielding for a few days protection until the major radiation threat is past.

In the New York State studies it was determined that shielding which would reduce the radiation in the ratio of 100 to 1 is a good practical protection. To bring this down to practical terms, a 100 to 1 reduction in radiation out in the open would require concrete about 18 inches thick on all sides and above. However, we have some amazingly good starting points for attaining satisfactory protection. For example, an ordinary basement in a lightly constructed building gives protection of about a 10 to 1 or 20 to 1 ratio, depending upon the construction. Starting from here, full protection of a 100 factor or more can be provided with an 8-inch thick concrete block shelter structure.

In the case of commercial buildings and many industrial plants, there is already in existence much space that affords quite adequate shelter. For example, a basement under a masonry building with concrete floor slab construction frequently has protection of 100 or more already built in. It may also surprise you that the intermediate stories of a multi-story building—any floor higher than the fourth and at least four stories under the roof—usually affords a combination of distance and shielding that is adequate. Most cities including the largest cities, such as New York, Rochester, Syracuse and Buffalo have large amounts of space that either already affords adequate shielding or can be readily made adequate.

Effect on Industry

No doubt you begin to surmise that many of our telephone buildings are so constructed that they already have fairly good fallout protection. This is true. A typical medium or large equipment or office building of masonry construction, and with a basement, usually contains considerable ready-made fallout shelter space. As a class, telephone buildings and telephone people, therefore, start out with a better than average built in protection.

Let's look at this whole nuclear protection problem a little more specifically as it affects us in the telephone industry.

We have, of course, thought about the dangers of nuclear attack. We have in fact built into our plant reasonable protection against moderate blast effects at certain very critical locations. We have given much attention to dispersal of our plant and to availability of alternate routes and facilities in order to avoid total failure of our service even in event of widespread destruction.

Little Effect on Plant

From the standpoint of our physical telephone plant, radioactive fallout outside the blast areas has practically no damaging effect. It does not affect cable or wire plant, either above or below ground, in the slightest. Neither does it affect telephone buildings, switching equipment, electronic gear, radio systems or any other components of our physical plant.

This means that if we could come through ourselves, we would have a lot to work with in restoring our service and our industry in the recovery areas.

Ideas for Future Planning

This fallout radiation hazard is relatively new to everyone. There is much that is not known about it and a great deal of further research on the subject is underway. However, enough is known right now to take definite and decisive action against the threat. I would suggest for our consideration the following forward planning:

(1) Acquire and encourage a knowledge and an understanding of the nature of the fallout hazard and of the general principles and procedures for minimizing exposure and injury.

(2) Make a survey of existing telephone buildings to identify protection already in existence for shelter against fallout.

(3) Plan a program of designated fallout shelter areas, making full use of existing protection and increasing it as may be appropriate.

(4) One of the best opportunities for obtaining good fallout protection at little or no extra cost is in the planning and construction of new buildings or building extensions. By merely rearranging space and facilities, with perhaps a little increase in masonry here and there, very substantial protection may usually be had for a very few dollars. In this manner, not only can adequately shielded space be created but it can often have convenient to it living facilities that make for something better than bare survival in the event the need comes.

(5) Consider providing the minimum habitability requirements for staying in the shelter spaces for a few days or perhaps as long as two weeks under the worst conditions. The basic necessities are adequate ventilation or air supply, water, emergency food supplies, simple radiation measuring instruments, a radio, and some type of sanitation facilities. It is advisable to give consideration also to rescue equipment, first aid supplies, and simple sleeping facilities and furnishings.

(6) Work out plans of action for survival of personnel and recovery of service in event of attack. In the difficult period of recovery it is certain that restoration of communications would be vital to progress in re-establishing the necessities of life in the community.

Advance Precautions Key

Many companies, including the Bell System companies, have already done preliminary work along these general lines. . . .

If what I have said gives the im-

(Continued on page 46)

Courts and Commissions

Ala. Circuit Court Orders $7 Million Refund by SBT&T

The Southern Bell Telephone & Telegraph Co. has been ordered to refund about 7 million dollars to its Alabama subscribers (TELEPHONY, Dec. 19, 1959), it was reported on Nov. 15.

The order came in a decision handed down in Montgomery by Circuit Court Judge Walter B. Jones, who remanded a six-year-old court dispute over Southern Bell's rates to the Alabama Public Service Commission.

The court rejected a commission order issued last Dec. 8 setting the amount of refund at some 26 million dollars and cutting rates by about 3.3 million dollars a year.

The court's action came in an appeal by the company, which contended that the commission had not allowed a fair rate of return on its investment in the state.

Judge Jones ruled that the commission had not considered properly the cost of reproducing utility property as a basis for deciding the rate base.

The court cited the Alabama Supreme Court as saying a fair rate of return should be "that generally being earned by others in the same general locality in business undertakings attended by corresponding risks and uncertainties."

Judge Jones observed that it was in the public interest to bring the rate dispute to an end. His decision was made on the telephone company's second appeal which began in January, 1954, when the commission rejected Southern Bell's request for a rate increase.

Southern Bell appealed to the circuit court, which set aside the commission order, ruling that the agency had erred in determining what the rate base and rate of return should be.

The company put the rate increase into effect in 1954. Since that time, it has collected about 30 million dollars, including interest, in a special fund, held in escrow, pending final settlement of the dispute.

The 7-million-dollar refund ordered by the court includes 6 per cent annual interest and a refund of 10 per cent federal excise tax.

"The public does not know what rates it has paid for telephone service over the past six years, nor indeed the price it is now paying," Judge Jones said.

He added that the company "does not know what earnings can be depended on for the past six years on its operations in Alabama, during which time substantial expansion of its plant and facilities had been undertaken."

Cal. Company Files Suit Against Bell Companies

According to a release by United Press International, on Oct. 21, the Citizens Utilities Co. of California, Redding, filed a 6-million-dollar suit in the U. S. District Court at San Francisco against the American Telephone & Telegraph Co., the Pacific Telephone & Telegraph Co., and the Bell Telephone Co. of Nevada.

UPI stated that:

"Citizens charged the defendants had deprived it of a fair share of receipts from toll calls among exchanges of the various companies since 1950."

Citizens Utilities' headquarters are located at Ridgeway Center, Stamford, Conn.

Approve Ordinance Giving Texas Company EAS Raise

The Killeen City Council on Oct. 25 approved on first reading an ordinance permitting Mid-Texas Telephone Co., headquartered in that city, to increase its rates to provide extended area service to more than 12,000 area subscribers.

Mid-Texas manager, W. T. Reichel said that his company proposes to spend some $196,000 in tying together 10 exchanges into a common dialing system.

Kan. Court Approves Sale

The sale of the McCune Mutual Telephone Co. to the Atlas Telephone Co. is reported to have been approved by a Kansas district court. E. L. Milliken of Collinsville, Okla., was scheduled to take over as manager Nov. 1.

Authorize Two Loans and a Rate Increase in Alabama

The Bayou Telephone Co., Bayou La Batre, received permission from the Alabama Public Service Commission, it was reported on Nov. 7, to negotiate a $100,000 loan from Stromberg-Carlson Co. The funds will be used to expand the company's service.

•

At the same time, the Alabama commission authorized the Tri-County Telephone Co., Inc., Ashland, to obtain a $1,720,000 loan from the REA, and to extend service to some 1,600 new subscribers. The commission also gave approval for a rate increase.

Ohio Commission Settles EAS Payments Question

The Ohio Public Utilities Commission on Nov. 18 decided that the costs and expenses of facilities and equipment required to provide Extended Area Service between the Congress exchange of Northern Ohio Telephone Co. and the Wooster exchange of Ohio Central Telephone Co. were approximately the same for each company, and, therefore no payments were due to either company.

The case began in 1955 when the commission cited Ohio Central and Northern Ohio to show cause why EAS should not be established between the Wooster and Congress exchanges. On Nov. 23, 1955, the commission directed the two companies to institute this EAS.

In May 1957 the commission ascertained that EAS had not been instituted and that failure to do so hinged on the two companies' inability to agree on whether compensation should be paid by one to the other.

Subsequent negotiations by the two companies did not produce agreement. Finally, in the current proceedings, the commission, as a result of two of its own five-day traffic studies — one in Wooster and one in Congress — determined that the flow of traffic in each

direction is substantially equal. Thus the stand-off in payments due.

However, the commission ruled, circumstances could change so that payment would be due one company from the other. This would be the case if:

(1) The telephone traffic in one direction became substantially disproportionate to that in the other direction, or

(2) The complex of either exchange became such that one exchange required substantially more of its facilities be used by the subscribers of the other company than the use made by its subscribers of the other company's facilities.

Deny SBT&T's Fla. Appeal For Rate Reduction Delay

The Florida Railroad & Public Utilities Commission on Nov. 17 denied an appeal by Southern Bell Telephone & Telegraph Co. to have the commission's rate cut order of Nov. 7 delayed (TELEPHONY, Nov. 19).

Southern Bell was directed in the Nov. 7 order to make reductions amounting to $2,046,500. In its appeal for delay, the company had asked for further adjustments which would increase the differential between person-to-person and station-to-station long-distance rates; and to regroup a number of exchanges on the basis that they have outgrown rates now charged.

The Florida commission stated it saw no reason to delay making changes requested on Nov. 7, that rate cuts should go into effect at once, and that any regrouping of exchanges must be taken up in another proceeding.

Trips Over Connection, Sues MST&T in Arizona

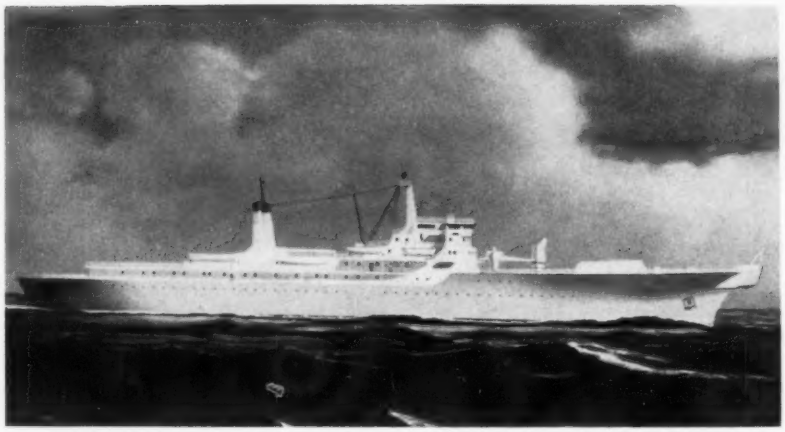
A $25,000 personal injury suit has been filed in U. S. District Court against Mountain States Telephone & Telegraph Co. by a Phoenix, Ariz. woman.

Mrs. Frank L. Mathieson claims she "sustained a severe aggravation of a pre-existing disability" on March 7, 1960 when she tripped over what she described as a "poorly-installed telephone connection" at the county assessor's office where she worked.

World's Largest Cable Ship Planned by AT&T Long Lines

The American Telephone & Telegraph Co., through its Long Lines Department, has announced plans for a specially-designed ship to lay oceanic telephone systems of the future.

The vessel, scheduled to be completed in 1962, would be the world's largest cable-laying ship. Specifications call for an over-all length of 512 feet, a breadth of 69 feet, and a capacity to carry some 1,800 miles of deep-sea cable. She would be powered by a steam-turbo system and have a cruising speed of 15 knots.



Artist's drawing of specially-designed ship planned by American Telephone & Telegraph Co. to lay oceanic telephone cables of the future. Plans call for the 512-foot vessel to be completed by 1962.

"The ship will be built to lay newly-developed telephone cable and amplifying equipment that require entirely new handling and laying methods," C. E. Schooley, Long Lines director of operations, said.

"She will be equipped with laying gear designed by Bell Telephone Laboratories for the latest and most efficient cable-handling techniques," he continued.

Special features would enable the ship to operate year-round in most weather conditions. For example, her hull would be ice-strengthened and her cable-handling deck enclosed for work in northern waters.

Gibbs & Cox, Inc., New York naval architectural firm, designed the ship. She will be built by the West-German shipyard, Schlieker Werft, in Hamburg.

Illinois Cooperative Plans to Purchase 3 Mutual Systems

The Mid Century Telephone Cooperative, Canton, Ill., has entered into sales agreements with three Illinois mutual telephone companies, according to Clyde E. Eskridge, Mid Century manager.

Mid Century plans to purchase the Bishop Hill Mutual Telephone Co., the Lafayette Mutual Telephone Co. and the West Jersey Mutual Telephone Co.

The Mid Century Cooperative plans to convert Bishop Hill to dial either this fall, or in the early winter of 1961. Until that time, however, the Bishop Hill Mutual will continue to operate the system.

Ask Raise in Louisiana

The Louisiana Public Service Commission on Nov. 18 was to have heard the application of the La Salle Telephone Co., Inc., Jena, for a rate increase at Jena, Olla, Tullos, Urania, and Wisner.

Incorporate in Missouri, Seek PSC OK to Serve

Articles of incorporation have been filed in the Nodaway (Mo.) County Recorder's Office for the Northwest Nodaway Telephone Corp.

The Northwest Nodaway corporation has also asked the Missouri Public Service Commission for permission to operate a telephone system in the northwest part of the county.

At present, the surrounding area is served by the Elmo Mutual Telephone Co.; the Farmers Mutual Telephone Co., Burlington Junction; the Farmers Mutual Telephone Co., Quitman, and the Clearmont Mutual Telephone Union.

Joe Beaver, registered agent for the new company, stated that he did not know whether the new corporation would consolidate the four mutual systems.

Obituary

ARTHUR A. LOWMAN, 82, former president of the Northwestern Bell Telephone Co., died in Omaha, Neb. on Nov. 13.

Mr. Lowman became president of Northwestern Bell in 1935. He was made board chairman in 1942, retiring a year later.

Survivors include the widow; a son, James M.; a daughter, Mrs. Morse Palmer; and a sister, Mrs. Walter Harris.

Asks to Serve in Illinois

The Illinois Commerce Commission on Nov. 18 was to have heard the application of the Okaw Commercial Telephone Co., Okawville, to serve the

territory presently served by the Du-Bois Telephone Co.

Book Review

TRANSISTOR MANUAL, Fifth edition: 339 pages; $1.00.

The General Electric Co. has announced publication of the fifth edition of its Transistor Manual.

One half million copies of the manual, a handy reference on transistors and application principles, have been distributed throughout the world by the semiconductor products department since 1957. Translations have been made into Japanese, Spanish, Portuguese and Turkish.

The new edition contains four new chapters and is expanded by 115 pages.

New chapters include tunnel diode theory and switching circuits; tunnel diode amplifiers; feedback and servo amplifiers, and test circuits.

The chapters on silicone controlled rectifiers; power supplies; transistor specifications, and rectifier specifications have been expanded and revised.

The transistor specifications chapter contains a current listing of American JEDEC (Joint Electronics Device Engineering Committee), registered transistor types with specifications and interchangeability information.

Copies of the manual may be obtained from G-E distributors or by writing to the Semiconductor Products Department, General Electric Co., Kelley Building, Liverpool, N. Y.

Israel Plans Expansion; Nationwide DDD Service

A 6-million-dollar loan to the government of Israel from the United States Development Loan Fund will be used in an over-all telephone expansion program.

The project will provide service to 51,500 new subscribers, complete a fully automatic subscriber toll dialing system throughout the country and expand toll facilities.

Total cost of the project is estimated at 47.7 million dollars, of which 30.7 million dollars is expected to consist of local currency costs to be met by the Israeli government and 17 million dollars will consist of foreign-exchange costs.

The work will be carried out by the Israeli Ministry of Posts under the general direction of M. J. Guy, director of the Posts' Telephone Engineering Service.

Needless Cut

"You must not pay a person a compliment and then straightaway follow it with a criticism."—MARK TWAIN.

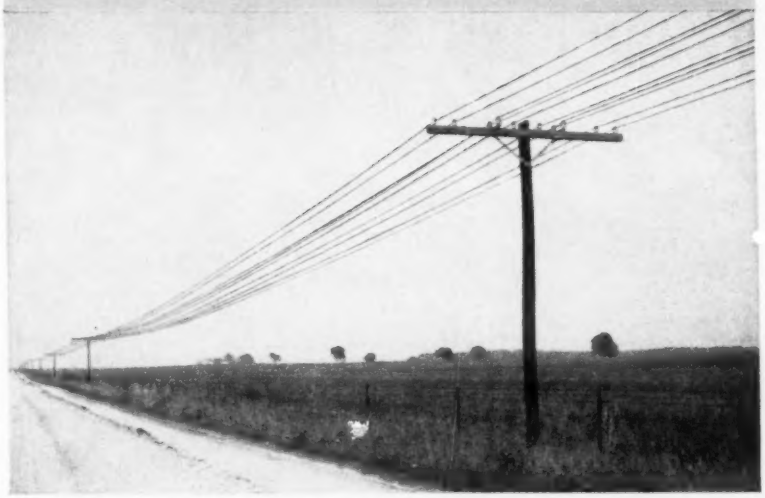
Crapo HTL-135

High Tensile Line Wire

MADE TO WITHSTAND HEAVY STORM LOADS

Time and time again, *Crapo* HTL-135 has demonstrated its ability to stand up under heavy ice and wind loads when other conductors failed. This can be attributed to the fact that *Crapo* HTL-135 combines high strength with high fatigue endurance plus superior elastic qualities which enable it to spring back into place when loads are removed. The result: service interruptions are minimized, re-sagging is seldom necessary, where this rugged telephone wire is used.

The excellent telephonic transmission characteristics of *Crapo* HTL-135 make practical subscriber loops of 14 to 15 miles with normal voltages and equipment. Longer loops are possible where higher voltages and more sensitive telephone sets are employed. For dependable, long-span, low cost rural lines, specify *Crapo* HTL-135.



HERE'S PROOF OF DEPENDABILITY

The Crapo HTL-135 in this typical rural line of 300-foot spans was subjected to two heavy ice storms within 14 months. This photo shows the line, without resagging, three months after the second storm.

Write for Manual TM-59 containing complete engineering data!

Crapo HTL-135

INDIANA STEEL & WIRE CO., INC.
Muncie, Indiana

THE Operator's Corner

By MAYME WORKMAN — TRAFFIC EDITOR

IT HAS BEEN SOME time since we discussed that important topic—"A Pleasing Voice Personality." It is about time to review it again, not only because of its importance, but also because it is being cultivated today by men as well as women.

Can you imagine a "Charm School for Men?" Well, such a school does exist in New York. It is called "Productive Communications, Inc." It is a one-woman corporation operated by Jorie Livingston, who is devoted to helping people do what she calls "building a new image."

She works with pupils, including professional men and women, on voice placement, diction, tone quality, and posture and gives suggestions on grooming, along with group and individual "improvising" or role-playing in real-life situations.

Mrs. Livingston, widowed mother of a 13-year-old daughter, had her own career as a professional singer ended by a cancer operation nine years ago.

She turned to giving voice lessons. Her present work developed after a businessman pupil whose hobby was singing said her lessons had helped him in his job.

Mrs. Livingston stated, "I decided to apply singing and theater training to salesmen, teachers, and contact men who had to stand up and get an audience to believe them."

Just as operators have been urged to stand in front of a mirror in taking voice exercises, Mrs. Livingston suggests that her male pupils spend 60 seconds extra while shaving, trying different facial expressions. When they comb their hair, she recommends taking tongue exercises and working on voice projection.

She also recommends listening to what other people say, and honestly trying to see things from their point of view.

How often an important and informative talk is lost, as far as the audience is concerned, because of poor diction, poor voice placement, lack of poise, monotone and failure to look the audience in the eye.

Some men are naturally charming, others, like some women, must cultivate charm. A pleasing voice will go a long way in attracting and holding the attention of an audience.

Let's review the development of a pleasing voice personality.

The customer's opinion of the telephone company's service is based upon the voice and manner of the operator who serves him. Therefore, it is essential that telephone operators develop a pleasing voice personality with clear, distinct enunciation. Because there are probably not so many operator-customer contacts today as there have been in the past, due to the mechanization of telephone equipment, it is imperative that the contacts we do have be pleasing to the customer.

Unlike many others who serve the public, telephone operators are not visible to their customers and must depend entirely upon their tone of voice to convey courtesy and a willingness to please.

There are three objectives to be achieved by developing a pleasing voice personality:

a. Improved public relations.
b. Increased accuracy and efficiency.
c. Greater ease in talking by operators.

In order to speak clearly and distinctly, our organs of speech must be used properly. These organs of speech consist of the mouth, including the lips, tongue, teeth, and nose, and the air chambers back of the nose.

There are six prominent features of voice technique:

(1) Enunciation—Enunciation is the act of giving the proper form to all of the different sounds which make up every spoken word or syllable.

(2) Rising inflection — A gradual curving upward of the voice.

(3) Stile strip method — The stile strip method of repeating numbers consists of separating the hundredth part of the number from the last two numerals, which are known as the jack numbers; placing emphasis on the last numeral of the hundredth part; and a rising inflection on the jack numbers.

(4) Tone of voice — This is the quality and expression given to the voice which displays the feelings and attitude of the speaker. Our voices should always convey personal interest.

(5) Resonance—This is the ringing quality and carrying power of the voice.

(6) Quietness — This consists of speaking clearly and distinctly, bringing the tones to the front of the mouth, using enough tone for one subscriber only.

Failure to use the organs of speech properly will create voice impediments. The most common faults of speech among telephone operators are: "Rigid Jaw," "Stiff Lips," and "Lazy Tongue." Corrective drills have been set up to overcome these faults of speech.

The first exercise is for overcoming a rigid jaw. This exercise is taken by opening the mouth wide enough to insert the middle and index finger. Do not permit the fingers to touch either the upper or lower teeth. Repeat the exercise until the jaw becomes flexible.

Use this sentence for jaw exercise: "Drop the jaw a little bit more and use the lips more freely."

To take the exercise for overcoming stiff lips, with the teeth closed, extend the lips as far as possible in a circular form. Then relax the lips and bring them to a smiling position. Repeat the exercise until the lips become flexible.

This is the sentence for the lip exercise: "We wish we were where Winnie Winkle went."

(Continued on page 46)

YEARS AHEAD IN FREQUENCY STABILITY

Precision frequency stabilization is a Collins tradition. In microwave systems, stabilization is achieved with the use of no-drift frequency reference cavities, regulated voltages and close klystron temperature control. With optional Automatic Frequency Control, tolerances are less than half the ±.05% FCC requirements and within the limits of new regulations effective in some bands in 1961. Interchangeable reference cavities are available at additional cost to achieve ±.005%. For details, write Collins Radio Company, Texas Division Sales, 1930 Hi-Line Drive, Dallas 7, Texas.

COLLINS MICROWAVE AND CARRIER

COLLINS

COLLINS RADIO COMPANY • DALLAS, TEXAS • CEDAR RAPIDS, IOWA • BURBANK, CALIFORNIA

Continued from page 24

calls directly and be billed immediately so that settlement could be made when checking out.

Moreover, equipment now available could be utilized so that credit card and collect calls could be handled with a minimum of attention by the hotel PBX operator.

•

"On the Line," a publication of the Australian Post Office, reports that a lineman, down under, has developed a method of detecting leaks in which he slides a hose into an underground conduit alongside a pressurized cable and holds one end of the hose to his ear, listening for leaks.

Recently, he heard a distinct hissing in one section of the conduit that did not sound exactly like escaping gas. It appeared to fade away and then would get quite loud. After he withdrew the hose from the conduit, a large brown snake followed it out, full of fight and hissing vigorously.

•

We have a recent report of an organization that experienced difficulty in obtaining ideas from its employes. They tried the suggestion system, but found that employes were often reluctant to put their ideas on paper.

They next installed telephones in booths about the plant, with the telephones being connected to recorders. Employes were invited to use the telephones to make suggestions, comments and criticisms on how the business was operated. The results were most gratifying, with employes suggesting numerous improvements.

Perhaps a similar arrangement could be utilized to good advantage by some operating telephone companies.

•

On Sept. 1, 1960, the American Telephone & Telegraph Co. changed the name of the commercial department in each of its areas to the sales department. This is the first change in name for the commercial department since it was organized as a part of the AT&T in the final quarter of the 19th century.

•

Crosstalk: We are informed that old ideas, like old medicine, can be dangerous to have around after they've done their job.

•

Golf is described as what men do to relax when they are too tired to mow the lawn.

•

Living in the past has its advantages. It's cheaper.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. Can you advise us where we may obtain information on the selection and performance of tape recorders, and how to determine what type should be selected for certain purposes in the communications field?

A. It is suggested that you obtain a soft cover book of 176 pages by Herman Burstein, titled: "Getting the Most out of your Tape Recorder." This book may be purchased from TELEPHONY for $4.25.

The book is written for tape recorder users in language which they can understand. It provides the answers to such questions as: What constitutes good performance? What can I do to get the highest level of performance out of my tape recorder? What makes one tape recorder play better than another?

The book opens with a discussion of the kinds of tape recorders available today, what they will do, and what kind of machine best suits individual needs. It then discusses the various aspects of the tape recorder, such as how many heads are required and how they operate, types of record level indicators, and particular tape recorder features.

The various adjuncts to the tape recorder that will vary its performance are comprehensively detailed. Here, the author deals with such items as the microphone, various tape accessories, and the tape itself.

He also gives a basic understanding of the criteria of good electrical performance. In this section, he discusses frequency response, distortion, and signal-to-noise ratio. A final section is devoted to stereophonic tape recorders.

•

Q. Are plastic plier grips, which can be used in lieu of friction tape on plier handles, available?

A. Your telephone supply house will be able to furnish plier grips of clear plastic in bright maroon. To apply these grips to the plier handles, dip the grip into boiling water to within one inch of the closed end for about 45 seconds. Then, drive on the plier handles. Their flexibility permits them to conform to the shape of the handles and assures a tight fit.

These grips are available in different sizes to fit 6-inch, 7-inch, 8-inch, and 9-inch pliers.

•

Q. How are fuseless station protectors used and what are their advantages?

A. Fuseless station protectors are approved by the Underwriters Laboratories for use on circuits connected to open wire and cables having metallic sheaths or shields. This type of protector depends on heavy-duty protector units that provide metallic grounding when called upon to carry heavy currents. They must, therefore, be able to carry considerably more current to ground than the conventional type of discharge blocks, so as to burn trouble clear, or operate de-energizing equipment on the power line. The more current the protector can handle, the better it meets this requirement.

The advantages claimed for this type of protector are low maintenance cost and no fuse troubles. They also permit universal use, in that the same protector that is used for indoor mounting is enclosed and used outdoors. This protector is also desirable from a safety standpoint, as abnormal current causes it to ground the circuit so it is not a hazardous voltage. In addition, it is small in size and neat in appearance.

•

Q. Can you advise us of the operation characteristics of a modern heat coil as used on present-day main frame protectors?

A. One type of heat coil now on the market is wire-wound, approximately 3½ ohms resistance and will carry .35 ampere for three hours. It will operate within 210 seconds on .5 ampere in an ambient temperature of 68 degrees F. Another type of heat coil is wound with approximately 2.2 ohms resistance.

Canada Travel Agency Holds World Telephone Conference

On Nov. 4, a Canadian travel agency, Calladine & Baldry, opened its new World Travel Center in Toronto, and observed the occasion with a world-wide telephone conference said to be the first of its kind.

Travel executives in Toronto, New York, London, Paris, Hawaii, Tokyo, and Sydney, as participants in the conference, offered greetings to the Canadian company and sent their congratulations via 75,000 miles of telephone cables and radio circuits.

The Bell Telephone Co. of Canada installed special amplifying and quality control equipment for good reception, and Calladine and Baldry executives listened over loudspeakers. Similar facilities were arranged in the cities abroad.

Jim Calladine, vice president of the Canadian agency, served as chairman of the conference.

In Honolulu, Bob Allen, president of Gray Line Hawaii, talked through the facilities of the Hawaiian Telephone Co. Coordination of the conference took place in New York.

Avoid Delusion

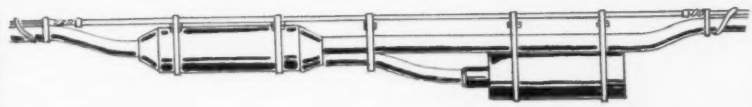
"There's no such thing as a 'gift' from government. It's a loan from ourselves and our children." — *Montana Power Company News.*

Howard D. Brown, recently retired after 38 years of service with the American Telephone & Telegraph Co., has been named consultant to Highway Trailer Industries, Inc. Mr. Brown will specialize in the design, operation, and application of public utility equipment, manufactured by Highway at its Stoughton, Wis., plant. Much of his career with AT&T was with the Bell System fleet in a similar capacity.

CEECO **CEECO LOADING COILS** CEECO

IN CUSTOM MADE LEAD OR STEEL CASES FOR USE ON LEAD OR PLASTIC CABLES

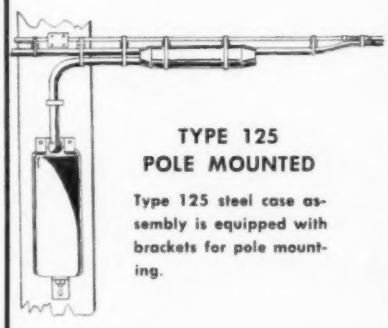
TYPE 124 LEAD CASE FOR AERIAL MOUNTING



TYPE 124 LEAD CASE

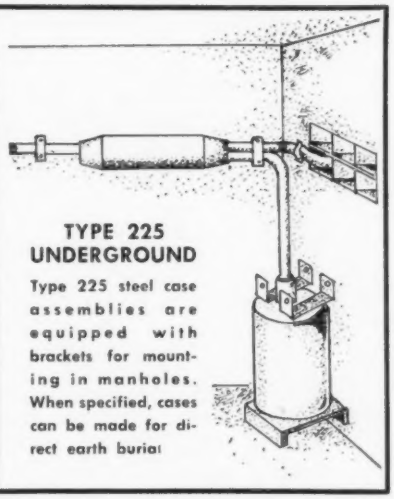
STEEL CASE ASSEMBLIES

- ALL LEAD STUB ASSEMBLIES ARE PRESSURIZED
- ALL PLASTIC STUB ASSEMBLIES ARE HERMETICALLY SEALED



TYPE 125 POLE MOUNTED

Type 125 steel case assembly is equipped with brackets for pole mounting.



TYPE 225 UNDERGROUND

Type 225 steel case assemblies are equipped with brackets for mounting in manholes. When specified, cases can be made for direct earth burial

Voice frequency coils, type 632(88MH) and 638(44MH) are primarily designed for use on two wire telephone cables. Types MF10, MF11, 641 and 642 coils are furnished for quadded interoffice and toll cables. Special coils can be made to meet other requirements.

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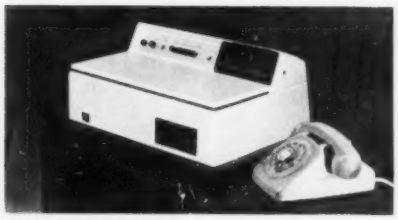
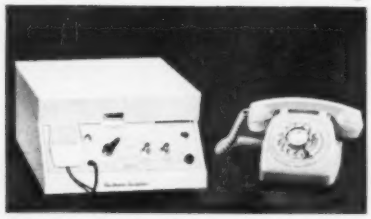
New line of ELECTRONIC SECRETARY telephone answering sets



LP(Long Play) model

The de luxe model that "does everything." Answers the phone automatically with message prerecorded by customer—(easily "erased" and changed)—records incoming messages, plays them back when customer returns. Takes any number of incoming messages up to 2-hour capacity. For service companies and individuals, stores, offices, plants and specialized uses in many other types of business.



SP (Short Play) model

This performs the same answering function as the LP model but has a more limited capacity. Answers the phone, gives message to caller, records up to twelve 13-second incoming messages. Compact, about typewriter size. Specially designed for the small service outfit or business. Low monthly rental greatly broadens the market.

AO (Answer Only) model

Answers phone with prerecorded announcement, but does not record incoming calls. Has microphone and tape recorder. Used by all sorts of organizations to deliver informative announcements up to 3 minutes. Theatres tell what's playing. Fuel suppliers and others leave numbers to call for emergency service at night. Advertisers sponsor weather reports, stock closings. Churches give inspirational messages.

national advertising program will help you win customers for new full line of automatic answering sets

Starting soon, exciting national advertising will spread the word of the new concept in telephone service—telling millions all about the new ELECTRONIC SECRETARY® phone answering sets that "fill the chair when you're not there."

This advertising will tell the story to thousands of customers right in your own area. And what a story it is!

Fully automated answering for every purpose

Here for the first time is a complete line of practical, compact devices to meet the individual needs of almost any customer. If he has to be out of his place of business during the day the ELECTRONIC SECRETARY set will tend the phone in his absence. If desired it will answer his phone nights, Sundays and holidays. There is also an "Answer Only" set to make informative announcements.

Now realtors, TV-service repairmen, lawyers, doctors and other small businessmen can be "in" even when they're out.

Now larger companies take sales orders and reports 24 hours a day. Theatres, municipal governments, weather bureaus, etc., can deliver recorded messages to the many people who call for information.

Virtually anyone who does business by phone is a potential customer for an ELECTRONIC SECRETARY set. The market—and the profit you can earn from it—are almost limitless.

Helping your salesmen sell

In addition to national advertising, you'll get help at the local level. There is a complete kit to help your salesmen. And another complete kit of promotional material to help every ELECTRONIC SECRETARY set user promote his new service.

Local market tests prove this selling program will create a sizeable demand in your area. So be sure you're prepared to meet it. For full information on how ELECTRONIC SECRETARY sets can add to your revenues, call or write one of the distributors listed below.

Electronic Secretary Industries, Inc., Subsidiary of GENERAL TELEPHONE & ELECTRONICS

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distributed by

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Northlake, Ill.

PROTECTING OUR INDUSTRY AGAINST RADIOACTIVITY

Concluded from page 36

pression that all life and civilization would not end for us in a nuclear attack, that is exactly right. As I have said, many millions of us could survive in good health even from an attack of maximum force and precision. The chances of survival and the probable numbers of survivors can be and have been computed under various possible attack patterns, just as precisely as telephone engineering people can determine by probability techniques, how many circuits are needed for different traffic patterns. Of course, none of us can foretell our own individual fate. However, it is certain that those of us who had thought out the problems and had taken reasonable precautions in advance would have a much better chance of surviving than would those of us who did not have this forethought.

Any kind of nuclear attack upon us would, undoubtedly, be an unprecedented catastrophe. But we have within our reach the ability to survive as a nation if we can beat the radiation hazard. We have in our hands the knowledge and capability to do this. We have the ability also to restore our civilization, our industry and our way of life even after a maximum attack. How fast we could do it would depend again on how much advance planning we had done. With reasonable planning leading experts feel we could get back to a fairly normal life in about two years.

These conclusions are not over-optimistic. They are realistic. They are agreed upon by military and civilian experts, practically without exception. Intensive studies made by such leading thinkers as the Rand Corp., Stanford Research Institute, the National Academy of Sciences, and the National Damage Assessment Organization of the Defense Department, all confirm these conclusions. They are endorsed by the President and every member of the Cabinet, by the Joint Chiefs of Staff as well as by the leading nuclear scientists.

To quote just two authorities:

Secretary of State Herter says "Numerous studies have shown that a program of fallout protection would give a substantial portion of our population an excellent chance of survival. In other words, a capacity to retaliate will be reinforced by an effective capacity to survive."

And the President says it this way. "In the event of a nuclear attack upon this country, fallout shelter offers the best single non-military defense measure for the protection of the greatest number of our people."

It is quite clear that protection from radiation is likely to become a way of life with us as well as, perhaps, an ultimate way of living. We in the telephone industry are traditionally out in front in thinking and planning ahead to meet new conditions, and this one is no exception. We can do much not only for ourselves but, as always, in the interest of the community.

THE OPERATOR'S CORNER

Continued from page 40

The exercise for a lazy tongue is done by dropping the jaw to the position for "ah" with the tongue resting in the roof of the mouth. Lift the tip of the tongue until it touches the roof of the mouth and say the word, "LA," beginning slowly and gradually increasing your speed, then gradually decreasing your speed. Take a long breath before beginning this exercise.

The sentence for the tongue exercise is: "Little Tommy Tuttle tiptoed on top of the table."

This concludes the review for developing a pleasing voice personality. If you are not satisfied with your voice, why not try the exercises? It will be beneficial in your work and, too, since men are becoming interested in charm schools and in cultivating a pleasing voice, we shall have to put forth a little extra effort to keep out in front in a field in which we have been interested for many years.

Traffic Questions

(1) What does the term "Marine Operator" include?

(2) How does the use of a radio channel differ from that of a wire circuit?

(3) What tone of voice should the operator use when using a radio channel?

(4) When an outward operator receives a report that the called party is expected today, or it is not known whether he will be there today, how should the operator proceed?

(5) If a customer reports trouble on his line or station, how should the operator proceed?

Answers to questions are on page 52.

D. C. Power, GT&E Head, On Worthington Board

Donald C. Power, chairman of the board and chief executive officer of General Telephone & Electronics Corp., has been elected a director of Worthington Corp., it was announced on Nov. 18 by Hobart C. Ramsey, chairman. Worthington Corporation is a leading manufacturer of a diversified line of capital goods equipment and machinery.

Among the other corporations of which Mr. Power is a director are:

Irving Trust Co.; Canada Dry Corp.; and Curtiss-Wright Corp., all in New York.

The Copper Range Co., Boston, Mass.

Beacon Mutual Indemnity Co.; Brown Steel Co.; The Columbus Mutual Life Insurance Co., and The Jeffrey Co., all in Columbus, O.

Various subsidiary companies of General Telephone & Electronics Corp.

In addition to his directorships, Mr. Power is a board member of the National Industrial Conference Board; a trustee of the Committee for Economic Development; and a board member of the Armed Forces Communications & Electronics Association.

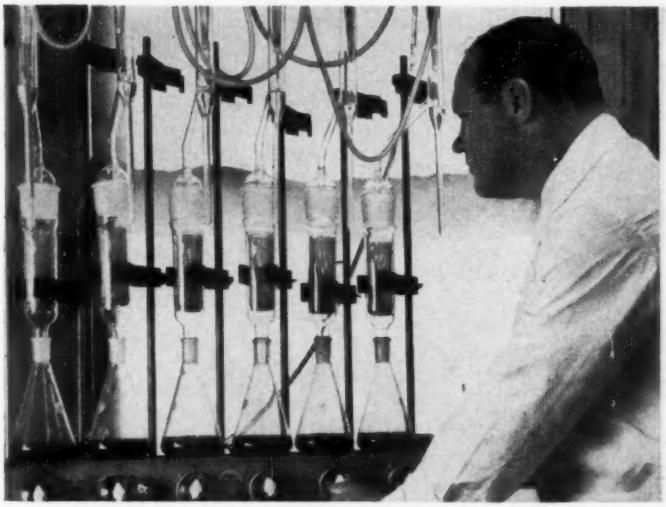
Builds Understanding

"Communication is a vital element in our modern business world. It is the key to all of our freedoms, for proper communications in a business enterprise is one of the greatest steps toward understanding. Through understanding, we gain good will and the respect of our neighbors in the community." — W. A. PARISH, president, Houston Lighting & Power Co.

TECHNICAL BRIEF NO. 60-1

By D. L. DAVIES, *Manager, Technical Dept. Wood Preserving Div., Koppers Company, Inc.*

USE OF THE ASSAY METHOD TO DETERMINE RETENTION IN POLES



PRESENT STATUS

The Assay Method of determining preservative retention in pole charges has been described in Koppers Technical Bulletins W-101 and W-102. Following is the status of the Assay Method as a replacement for the less accurate gauge method of determining preservative retention.

The Western Electric Company, Inc. over 2 years ago made the Assay Method a part of its specifications on all new pole contracts. This major specification change was adopted to eliminate "weak sister" charges — charges which meet standard specifications by other measurement tools, but which in reality do not contain sufficient preservative to provide long-lasting protection.

The Rural Electrification Administration in April, 1960 issued new specifications which make mandatory that determination of retention in poles be made by the Assay Method. Many REA utilities have suffered financial loss from premature pole failures. They, too, want to eliminate the "weak sisters".

The Federal Government has a tentative specification TT-W-571f, now being reviewed by industry, which also calls for the Assay Method for determining retention (without alternates) in both poles and piles.

The AWPA adopted the Assay Method for determining retention in poles as a "full standard" at the April 24-26, 1960 meeting.

HOW TO APPLY THE ASSAY METHOD

In applying the Assay Method to poles, the specifications require that the outside ½" of the pole section be discarded. This section usually contains about 14-lb. preservative per cubic foot. Specifications further require that the next 1½" be assayed for retention. Therefore, an 8-lb. normal gauge retention charge must have a minimum of 6-lbs. per cubic foot in this zone. A 10-lb. treatment must have 7½ lbs. and a 12-lb. treatment must have 9-lb. in the assayed zone. No undertreatment allowance is permitted. Adoption of these retention requirements represents the most significant advance in standards for pine pole treatment since the adoption of 2½" or 85% sapwood penetration requirement in the late 1930's.

ANY COMPANY CAN ADOPT THE ASSAY METHOD

The status of the Assay Method for determining retention has advanced to the stage that any company can adopt it by a simple notation on the purchase order specifying that "poles are to be treated to a retention of *x* pounds/cubic foot as determined by assay".

• • • • • • • • • • •

For the full report on using the Assay Method, or answers to technical questions on poles or pole treatment, write: Koppers Company, Inc., Wood Preserving Division, Technical Dept., Room 757, Koppers Building, Pittsburgh 19, Pa.

C-45

KOPPERS
KOPPERS
PRESSURE-TREATED WOOD

News on New Products

GENERAL PURPOSE DIGITAL COMPUTER — A general-purpose digital computer called the Sylvania 9400, developed to serve as the nucleus of large-scale, custom-designed data processing systems, has been announced by Sylvania Electric Products Inc., subsidiary of General Telephone & Electronics Corp.

Henry Lehne, a senior vice president of Sylvania and general manager of Sylvania Electronic Systems, said that the Sylvania 9400 is the most powerful computer in production for both engineering and scientific applications and general administrative data processing. It will be marketed solely to federal agencies and operating telephone companies, he said.

"The Sylvania 9400 is a multiple-computer system, incorporating a central information processor and satellite data input-output processors," Mr. Lehne stated. "As a result, it is capable of performing four separate tasks on a continuing basis, at the same time its primary function is being carried out at the rate of 125,000 operations per second."

Completely transistorized, the Sylvania 9400 has been developed for "second-generation" data processing users who desire a large-scale system custom-designed to their requirements. It is capable of direct operation through voice circuits, teletype lines and microwave communications networks, and also may be utilized with special digital display and control equipment, the company reports.

Because of the Sylvania 9400's high operating speed and powerful instruction repertoire, it is among the most advanced computers available for such scientific computations as those required by federal agencies for nuclear research or determination of satellite orbital characteristics, the company states. Applications for administrative agencies include diverse high-volume accounting uses.

The Sylvania 9400 program is reported to provide, in addition to equipment, over-all systems analysis and programming, and all aspects of study, implementation, training and maintenance for large-scale data processing systems.

Both purchase agreements and rental contracts are available, the Sylvania official said, as well as systems study contracts and other consulting services distinct from equipment feasibility studies. Request NP1486.

•

BACKHOE ATTACHMENT — The Parsons-Shawnee 88C Hydro-Clam — a new backhoe attachment for utility tractors designed specifically for spot excavations—has been announced by the Parsons Co.

The new attachment was demonstrated at the 1960 Koehring Co. Equipment Show. Parsons is a division of Koehring.

The Hydro-Clam is available with 24, 30, and 36-inch wide buckets, features 10,000-pound breakout, 3,000-pound lift capacity, 12-foot digging depth, and 9-foot, 9-inch dumping height.

The Hydro-Clam bowls are said to operate independently, or together, to

produce smooth, clean sides and level floor. The breakout pressure of clam bowls produces square corners.

The entire clam assembly reportedly can be attached or detached from the boom in minutes. Request NP1487.

•

TRANSISTOR EXPLORING COIL AMPLIFIER—Stewart Bros., division of Instrument Laboratories, has announced a new, all-transistor exploring coil amplifier (Model TE).

The company states this lightweight instrument increases exploring coil signal more than 200 times.

Model TE supersedes Stewart Model E amplifier. The new unit is one-fourth the size and weight of Model E, and it uses only four pen-light cells. Model TE is 2 inches x 3 inches x 4 inches and it weighs 10 ounces.

The case is of molded Bakelite and the coil and telephone connections are made to two telephone jacks, one of which turns off battery when the plug is removed. Output is adjustable by knob between the jacks.

Most standard cable testers are designed so that the signal strength ad-

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

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NP1490_____; NP1491_____; NP1492_____; NP1493_____;
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11/26/60

jacent to the sheath of a cable is approximately .003 volt, the company states. This is difficult to hear, especially on windy days, in noisy locations or when the fault is of low resistance. Increasing the signal strength causes carryover beyond the actual trouble and indirectly "noises" up adjacent lines, according to Stewart Bros.

All of this can be prevented simply by amplifying the pick-up coil signal to a point where it is many times as powerful as the actual emanation from the cable itself.

In operating the Model TE, it is only necessary to attach the receiver plug to one jack on the amplifier and the exploring coil to the other jack. Any type of receiver will give perfect results as long as it has an impedance between 40 and 100 ohms at reference level, the company states. Request NP1488.

•

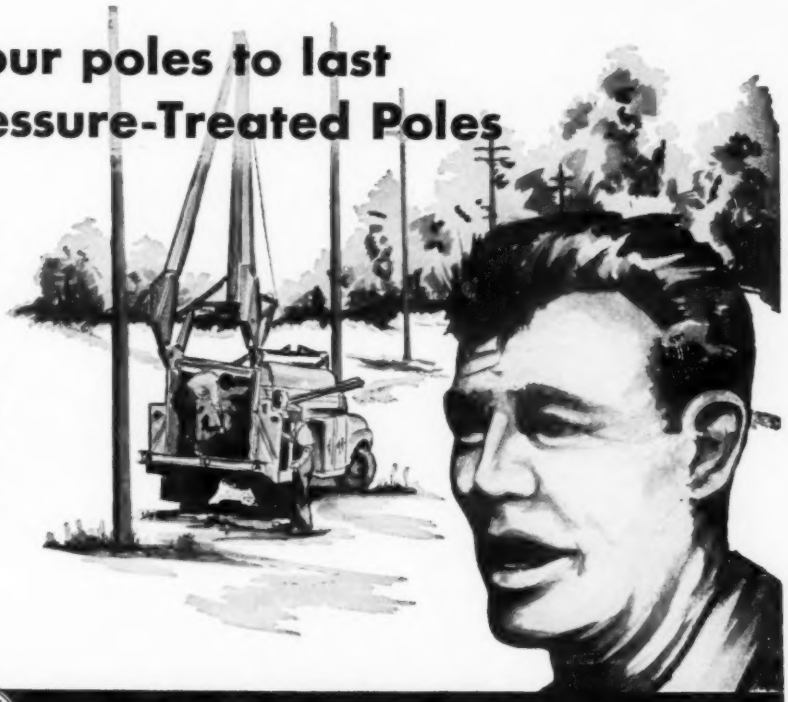
FIRE-RESISTANT CABLE — The major source of panic in any fire . . . black smoke and toxic gases . . . has been greatly reduced by the installation of H. K. Porter Co. Type K Silicone cable at the Bell Telephone Co. of Pennsylvania, western area office in Pittsburgh, according to A. B. Friedman, Bell project engineer.

The Type K Silicone cable, manufactured by the Porter company's National Electric Division, is said to be capable of withstanding temperatures up to 3500 degrees F. and is unaffected by water. It has been installed at the

Bell Telephone plant as part of an $850,000 power renovation project.

"We require this high-temperature resistance for reasons vital to our nation-wide telephone network," stated Mr. Friedman. "This center serves important local area exchanges, as well as being a toll-switching center for coast-to-coast direct distance calling. Our operators must be on duty at all times, active as long as possible in the

If you want your poles to last
Specify T-C Pressure-Treated Poles



Every pole bearing the T-C brand has received the best in preservation. "The T-C Treatment" makes them last, and give you generations of trouble-free service. Our pressure treating process (and we think you'll agree) is the best yet developed by modern Technology . . . and, only the best chemical preservatives are used. That's why we can say—Specify T-C and get the best in preservation.

Specify T-C

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TAYLOR - COLQUITT CO.
SPARTANBURG, SOUTH CAROLINA

PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA

event of fire within the building," continued Mr. Friedman.

The new cable is used to connect seven new transformer vaults with the central exchange. The soft stable reactance system was devised by Charles I. Maust, consulting engineer of Summit, N. J., who also specified and designated the Type K cable.

Transformer capacities are pooled on a special secondary network bus, and loads are fed via incoming feeders through motor-operated circuit breakers. Switching and load distribution flexibility is claimed to be enhanced by tie breakers connected between the incoming feeder breakers.

All incoming feeders, as well as ties to the secondary network bus, are of isolated phase construction. This, Porter says, limits fault currents and provides a high degree of protection against phase-to-phase and phase-to-neutral faults in the network system.

Insulation of Type K cable is a combination of first-grade, extruded silicone rubber, wrapped with a spiral glass and asbestos tape and covered with a special braid. Tests conducted by Mr. Maust, using a gas-oxygen mixture, subjected the cable to temperatures approaching 3500 degrees F. A barely discernible white smoke was given off, but the cable reportedly did not carry flame, even after being placed in the bluest section of the flame for a period of five minutes. Request NP-1489.

•

RIGID ROPE FOR FISHING CONDUIT—A safe, economical alternative to metal fish tape, called Rigid Rope,

has been introduced by Jet Line Products, Inc. It is made of non-conductive polyethylene and is said to be designed for use in any size and any type of conduit.

Jet Line Rigid Rope is constructed with a braided poly jacket over a solid poly core—making a line that is claimed to be flexible and easy to grip without "springing" out of hand. Rigid Rope weighs 14 ounces per 50-foot length, yet it is long lasting. Jet Line says it will not rust or separate and that it tests at 800 pounds pull. It glides easily through conduit and will not damage pipe.

Jet Line Rigid Rope is available in 50-foot and 100-foot lengths. Each package includes a polyethylene "guide sleeve," 12 inches long, for feeding Rigid Rope into outlet boxes. Request NP1490.

•

SAFETY HOOK AND LATCH — A new component for its line of Accoloy Kuplex sling chain assemblies has been introduced by American Chain Division, American Chain & Cable Co., Inc. This new component is designated as the Accoloy Kuplex safety hook with safety latch assembly.

Kuplex sling chains are assembled by the distributor from factory-tested components, consisting of master link, chain portion, "Kuplers" and any desired type of hook; sling, grab or foundry hooks

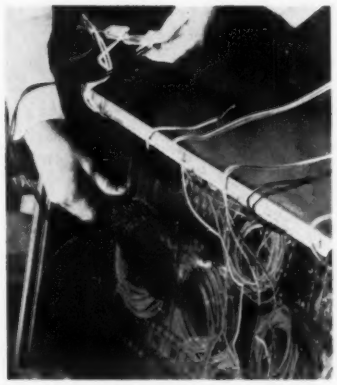
and now the new Accoloy Kuplex safety hook with safety latch assembly.

Present users of Kuplex slings with sling hooks can convert such hooks to a safety-type hook by replacing the conventional load pin with the special safety latch assembly available as a separate component.

Kuplex sling chains are now furnished, the company says, with an improved type of load pin with a retaining disc. Request NP1491.

•

NEW POLYETHYLENE FOR SHIELDING—Tests on wire coated with high density polyethylene at the Goodrich-Gulf Chemicals, Inc. research laboratories are reported to show that a new type of material developed by the

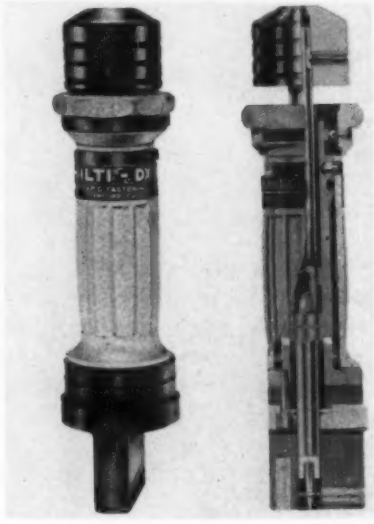


company has dielectric and other properties which make it suitable for wire and cable shielding.

It offers the inherent advantages, according to Goodrich-Gulf, of exceptionally high density polyethylene—resistance to abrasion, high temperatures, cut-through, environmental stress cracking, and thermal embrittlement—but can be processed with the same ease as conventional polyethylene. Request NP-1492.

•

POWER FASTENING TOOL—A new power fastening tool for fastening into dense materials such as concrete, cinderblock and structural steel—the Hilti Model DX 100-L—has been announced by Hilti, Inc.



The DX 100-L is reported to eliminate the hazards of ricochet, fish-hooking and explosive spall encountered with "gun-type" tools.

Hilti says its DX100-L tool starts the fastener in contact with the material and then pushes it in. This is accomplished by using a heavy hammer to hit the high mass steel piston which contains a very light, slow burning, blank charge. There is no triggered

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gun action. There is no initial velocity and there is relatively slow acceleration.

In addition, all the fasteners provided are assembled with a washer installed. Together with the low velocity of the Hilti tool, this is reported to prevent the danger of over-penetration.

The chief limitation of the Hilti DX 100-L, compared to conventional stud guns, is that the maximum fastener size it can drive is a ¼-inch-20 stud. This prevents its use in the heaviest fastening applications. In the majority of cases, however, it works effectively and the company claims the following advantages for it:

Convenient, can get into many tight places.

Quiet—all that is heard is the hammer hitting the tool.

Fast, saves time.

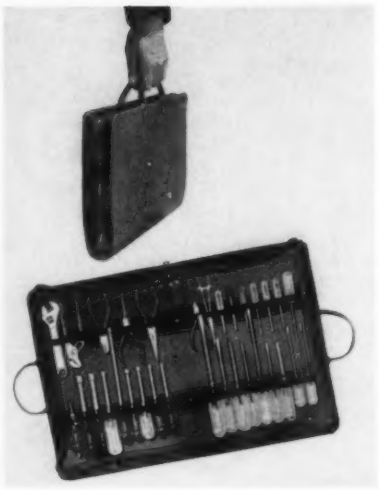
Efficient—the "conic" or tapered shape of the fasteners provides better holding power, permitting the use of shorter, less expensive sizes.

In less dense material such as concrete or cinderblock, no booster is necessary. All that is required is the hammer.

Request NP1493.

•

SERVICE CASE—Xcelite, Inc., manufacturer of professional hand tools, is



marketing a new, executive-type service case for electronics engineers and others.

With a 40-tool capacity the top grain leather case is said to be capable of carrying practically every tool required for electronic radio and TV repairs. Leather thongs hold tools neatly and firmly in place, yet permit easy removal. Felt-type lining protects tool finishes and handles. Case is reinforced against rugged use. Black or brown models are available. Request NP1494.

IN THE NATION'S CAPITAL

Continued from page 21

same information. The Justice Department agreed with the FTC. Refusal of access to the census reports, the FTC argued, would make its merger investigations more difficult.

The Census Bureau, backed by the Commerce Department, successfully argued, however, that it should have authority to treat individual reports in strictest confidence. The Census Bureau contended that to go back on its word would hinder its own statistic-gathering job, aside from the moral obligation to keep a promise. The courts have now vindicated this position.

Answers to Questions On Page 46

(1) The term "Marine Operator" is understood to include those operators who handle calls to and from ships and aircraft over coastal harbor and high-seas facilities, as well as over mobile service facilities.

(2) The use of a radio channel differs from that of a wire circuit in that a raised tone, or other distortion of voice, is apt to make conversation ineffective, rather than to improve transmission, since the equipment controls the volume of speech.

(3) The best results are obtained by keeping your voice at a normal conversational level, regardless of how poorly you hear the distant party or how much atmospheric interference you encounter. Speak distinctly, giving full value to each syllable.

(4) The operator should say to the calling party, "Would you prefer to place your call again or shall I leave word for Mr. (called party) to call me?"

(5) The operator should say, "One moment, please, I'll give you Repair Service," or if locally directed, the operator will say, "That is handled by Repair Service. You can reach it by dialing (code)."

However, if he wishes the operator to report the trouble, or if he hangs up without waiting for connection to Repair Service, the operator will secure any additional details that are necessary and report the trouble.

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That 6-Year Alabama Rate Case

The Alabama Public Service Commission has already indicated that it is going to appeal a recent decision of a lower Alabama court in a telephone rate case which has been kicking around for over six years. The lower court earlier this month remanded to the Alabama commission for the second time this rate case, involving the Southern Bell Telephone & Telegraph Co. Alabama Circuit Judge Walter B. Jones ruled that the Alabama commission had not allowed sufficient weight to cost of reproduction in arriving at a rate base, and in failing to follow an Alabama Supreme Court ruling requiring that the rate of return be based on the level "generally being earned by others in the same general locality in business undertakings attended by corresponding risks and uncertainties."

At the same time, Judge Jones threw out a commission order of a year ago directing the company to refund some 28 million dollars and cutting rates about 3 million dollars. Jones did order the company to refund about 7 million dollars out of the funds (about 30 million dollars) collected under escrow for higher rates sought by the company and allowed to go into effect pending final settlement.

The case began in 1954 when the commission turned down a company request for a rate increase, ruling that 5.97 per cent return was sufficient. On the first appeal, Jones found this to be confiscatory and allowed a 4.8 million dollar rate increase to go into effect.

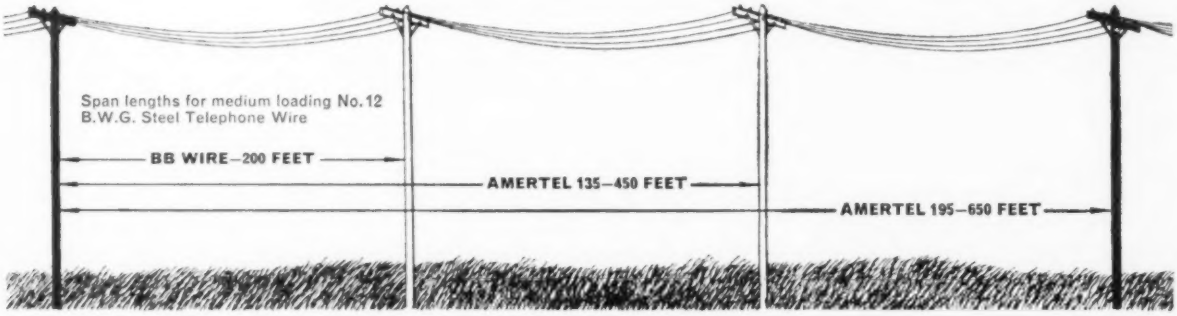
Out of 2,000 hopefuls, Myron G. Mohr (right) station superintendent for Intra State Telephone Co., Galesburg, Ill., won the Winchester Model 12 Featherweight repeater rifle, given at a drawing held by Ramset Fastening System at the recent convention of the United States Independent Telephone Association. John N. Schwaller (left) Ramset's advertising manager, made the presentation. Ramset is part of the Winchester-Western Division of Olin Mathieson Chemical Corp.

The higher court then sent the case back for rehearing, finding both the commission and the lower court in error—the latter because it had arrived at an independent verdict on the increase. Since then the company asked for an additional 2 million-dollar rate increase and has collected 30 million dollars under escrow. Jones' more recent opinion found that a return of 8.5 per cent on the company's equity in its property is required under "the utility's present situation" and "its requirements and opportunities." Next move will be up to the Alabama Supreme Court.

Judge Jones felt strongly that this old-age rate case ought to be settled soon, not only in the interest of the public, but also for the subscribers, investors, and all around.

Soul's Bright Dress

Leaves seem light, useless, idle, wavering, and changeable — they even dance; yet God has made them part of the oak.—So he has given us a lesson, not to deny stout-heartedness within, because we see lightsomeness without. —LEIGH HUNT.



It's true...Amertel 195 has tripled span lengths!

In medium loading areas, the old 12 gauge BB Wire could be installed in spans of 200 feet using about 27 poles to the mile. Now, with the new extra-high-strength USS Tiger Brand Amertel 195, you can use spans of 650 feet with only 9 poles per mile. Of course, rough country may increase the number of poles somewhat, but the savings in poles and other equipment are obvious.

Amertel 195 has other advantages too:

- Greater strength increases its ability to withstand ice loading. This wire has been known to touch the ground under severe icing conditions without breaking.
- Better voice transmission efficiency
- Reduced installation costs

More information—free! Just write for our booklet, "Amertel 195," American Steel & Wire, Dept. 0415, 614 Superior Ave., N. W., Cleveland 13, Ohio.

USS **American Steel & Wire Division of United States Steel**

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Alabama, Southern Distributors
United States Steel Export Company, Distributors Abroad

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Hundreds of utilities know that the OSMOSE way is the only sure, safe way to keep older poles standing for many more years of trouble-free service. And the cost is remarkably low. Actual field reports show that the OSMOSE Inspection and Treatment Program can pay for itself if only 3 to 6% of your older poles can be saved from becoming "rejects". Get all the money-saving facts, write: Osmose Wood Preserving Co. of America, Inc., 976 Ellicott St., Buffalo 9, N. Y.

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Helpful Literature

STARLITE SALES KIT—Starlite telephone sales aids, promotion tips and display ideas have been incorporated into a new sales kit which is now available from Automatic Electric Sales.

An attractive jacket-folder contains all the sales material needed to introduce the new compact telephone to subscribers.

Included in the kit are radio commercials, newspaper ad mat, display posters, publicity release and photo mat, and envelope stuffer.

A promotional guide gives tips on how to use the sales material as well as offering ideas for special occasions. The promotion guide also contains a section on special Christmas promotion ideas. Request HL619.

•

RELAY-POTENTIOMETER BROCHURE—A full report on the Raysistor, an electro-optical, relay-potentiometer, is contained in a brochure published by Raytheon Co.'s Industrial Components Division.

The fold-out brochure, which utilizes cross-sectional diagrams, circuit diagrams, charts and photographs, explains the electrical and mechanical characteristics of Raytheon's new basic-circuit component, and tells how it is designed to replace relays, switches, and potentiometers for low-noise commutation, switching, and controlling circuits.

Use of the Raysistor as a control link, in either the tube or transistor version of the AGC loop; as a suppressed carrier modulator; a single-pole, double-throw relay; as a commutator; or as a negative resistance generator, is shown in this Raytheon brochure. Request HL-620.

•

FACILITIES, PRODUCTS BULLETIN—"The Story of High Quality Specialization," a new 12-page two-color bulletin, has been issued by National-Standard Co. The new bulletin describes the company's five manufacturing divisions and its full line of specialty wire and metal products.

How National-Standard applies research and engineering skill to diverse industries such as electronics, automotive, appliances, machinery, office equipment, rockets and aircraft is told here.

Products described in the bulletin include Copperply copper-coated steel wire, specialty steel spring wires, Athenia flat strip steels, Reynolds wire

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cloth, Cross perforated metal, and Wagner metal-decorating equipment.

Illustrations show National-Standard facilities at Niles (Mich.), Clifton and Secaucus (N. J.), Dixon (Ill.), Carbondale (Pa.), and Worcester (Mass.). Request HL621.

•

CABLE BULLETIN — Okonite Co.'s Kennecott Wire & Cable Division has recently issued a new bulletin on its Unit Type Paired Exchange Telephone Cable.

The 16-page 8½x11-inch brochure covers five topics: technical and production know-how; specifications, including charts on capacitance, dielectric strength, conductor resistance, color code, etc.; mechanical characteristics and construction details of the various types of cable; and a discussion of metallic and non-metallic protective coverings.

Incorporated also is a list of other products manufactured by the Kennecott division. Request HL622.

•

TRANSMISSION TEST EQUIPMENT —Northeast Electronics Corp. has put out a new brochure on its transmission test equipment which should prove helpful in maintaining circuits so as to meet the transmission quality demanded by Direct Distance Dialing.

The company includes in this line of equipment such items as:

The portable, self-powered Models TTS 4A and TTS 15 transmission test sets, which are designed for general measurements.

The Model TTS 9S multi-frequency reference tone generator designed for central office installations.

The Model TTS 14, described by the company as "extremely simple," and which enables repairmen to measure transmission levels on the subscriber's premises.

The Northeast Electronics units are presented in photographs and diagrams. Performance data sheets and individual data sheets are also supplied in the brochure.

Northeast states, that, with the reduction in degree of operator surveillance that has come about with the growth of Direct Distance Dialing, added transmission maintenance is necessary.

The company points out that, to instrument the stepped-up transmission maintenance program will put an extra burden on engineers and technicians and may require expansion in numbers of this group of personnel. Several steps, says E. H. B. Bartelink, Northeast Electronics Corp. president, can be taken to minimize the manpower

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National Distributors: Automatic Electric Sales Corporation, Northlake, Illinois; Leich Sales Corporation, 427 W. Randolph Street, Chicago, Illinois.

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Regional Distributors: Buckeye Telephone & Supply Co., Columbus Ohio; The Lindsay Telephone Supply Co., Cleveland, Ohio; Pankey Supply Co., Charlottesville Va.

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requirements of such a program. These steps are:

(a) Provide equipment which reduces the time required to prepare for and to perform the measurements.

(b) Eliminate the need to send personnel to unattended offices to make transmission measurements.

(c) Simplify the testing equipment to a point where personnel with less technical training can perform the measurements. Request HL623.

•

CELLULAR FLOOR FEEDER RACEWAY—The Wheatland electric headerduct cellular floor feeder raceway is the subject of a new catalog just published for contractors, engineers, and architects by Wheatland Electric Products Co.

Wheatland electric headerducts are large capacity feeder raceways which provide access to a building's cellular steel floors, utilizing the cells as raceways for electrical conductors. Individual outlets for telephone, intercommunications, and power may be located anywhere along the energized cells.

The new catalog contains product illustrations and detailed information for specifying and installing Wheatland headerduct and service fittings.

It also contains suggested architectural specifications for the cellular floor feeder raceway, and information covering the various access unit spacings and lengths of the raceway. Typical cross section drawings of cellular steel floors are also incorporated in the catalog.

Modern design die-cast aluminum electrical service fittings are offered in colors for matching office decor. Request HL624.

Space Mail Test Via Echo Conducted for P. O. by Adler

The first successful transmission of a Speed Mail letter, using the Echo satellite as a relay station, was announced on Nov. 11 by Postmaster General Arthur E. Summerfield. This project, an extension of the experimental facsimile Speed Mail Service, was managed for the Post Office Department by Adler Electronics, Inc. of New Rochelle, N. Y.

The historic letter, containing the Post Office's traditional Christmas message—"Shop and Mail Early"—was fed into a facsimile transmitter in the Postmaster General's office in Washington, D. C., and sent by wire line to the Naval Research Laboratories at Stump Neck, Md. It then was beamed by microwave at the Echo satellite orbiting 1,000 miles above the earth.

The signal was bounced off the passive reflector and picked up by a sensitive tracking antenna at the Holmdel, N. J. station of Bell Telephone Laboratories. A wire line carried the letter to the Postmaster's office in Newark, N. J., where it was converted to its original form by a facsimile transmitter.

Postmaster General Summerfield pointed out that this is the first time

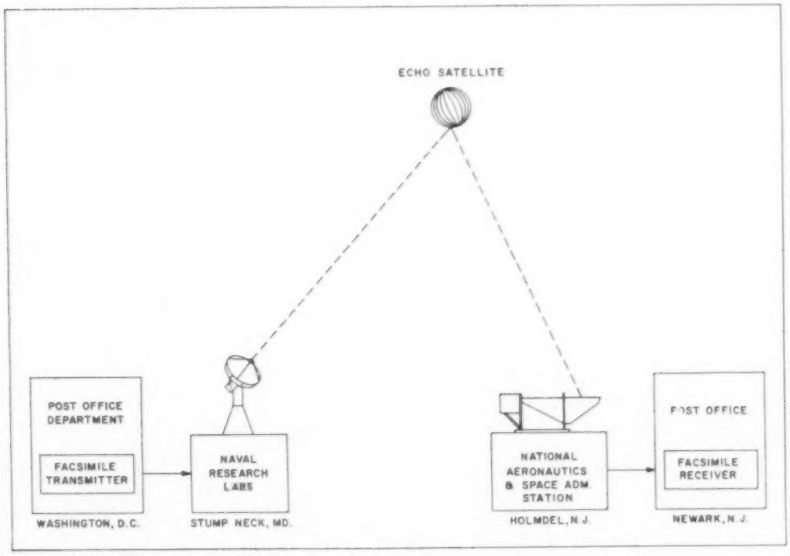

Diagram of the first "Space Mail" experiment. A facsimile letter was sent from Washington, D. C., to Newark, N. J., via the Echo satellite. The path of the message to Echo, and bounced back to the tracking antenna of Bell Telephone Laboratories at Holmdel, N. J. (where the letter was converted by facsimile transmitter to its original form) is indicated.

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The first Speed Mail experiment using a space satellite is commemorated in the painting (shown above) accepted for the Post Office Department by Wade S. Plummer, director of the office of research and engineering (center); and Harold W. Lieske, assistant director for research and development (left). The presentation is being made by Alfred Strogoff, vice president of Adler Electronics, Inc., New Rochelle, N. Y., whose company is managing the experiment for the Post Office Department.

a postal service of any nation has used a satellite for the peaceful, practical purpose of sending a letter.

While the transmission between Washington and Newark was instantaneous, approximately five minutes were required from the time the letter was fed into the facsimile transmitter until it was reprinted by the facsimile receiver. With existing techniques, however, the system is reported capable of simultaneously transmitting up to 50 letters in a three-minute period.

Satellite links planned for the near future by the military and industry, which are capable of transmitting television signals, will permit the transmission of six standard one-page letters, maps or pictures every second, Adler Electronics states.

Ben Adler, president, said that his company is planning to use active, as well as passive, satellites for further facsimile space transmissions.

Wisconsin Association Holds Fall Conference

The Wisconsin Telephone Association conducted its sixth annual Fall Conference at the Hotel Eau Claire, Eau Claire, on Oct. 26 and 27, with a registration of 188, representing 73 operating companies.

Members of the committee making conference arrangements included Mrs. Edna Lokken, Baldwin Telephone Co.; J. F. Benjamin, Cumberland Telephone Co.; Byron C. Dale, Nelson Telephone Cooperative, Durand; Warren Kirk, Luck Telephone Co.; Jacob Maciosek, Chequamegon Telephone Cooperative, Inc., Cable; and James Smith, St. Croix Telephone Co., New Richmond.

MRS. EDNA LOKKEN

Committee members chose Mrs. Lokken as chairman of the Fall Conference, the first time in the association's history that a woman has been chosen to head a conference or policy committee.

END YOUR SHOPPING PROBLEMS . . . Give the Finest of Fruit Cakes

Ingredients are Choicest Dates, Candied Cherries and Pineapple combined with the best pecans and walnuts.

It has no raisins, citron or peel . . .

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SIERRA NEVADAS TOLL

Concluded from page 23

ductors. A total of 2,558 Case transposition brackets were employed on this project.

Due to the rugged and irregular terrain involved at certain locations along the route, poles could not always be placed at the theoretical transposition points. At these points, mid-span transposition brackets were installed to meet design limitations on the overall transposition scheme. One hundred fifteen Case mid-span brackets were required to provide transpositions at theoretical design points along the open wire route.

Quality of the engineering and of the type of pole line and wire used was quickly and successfully put to the test during the unusually severe conditions of last winter. However, precedents have also shown that day after day, in good weather and bad, the leads thus engineered and built provide reliable, high-grade toll service. Original investment costs are reasonable, and ensuing maintenance and operating costs are low. Additions can readily be made as the need for them arises, either by wire, carrier, or a combination of both.

Military Sales Head, Assistant Secretary Named by Kellogg

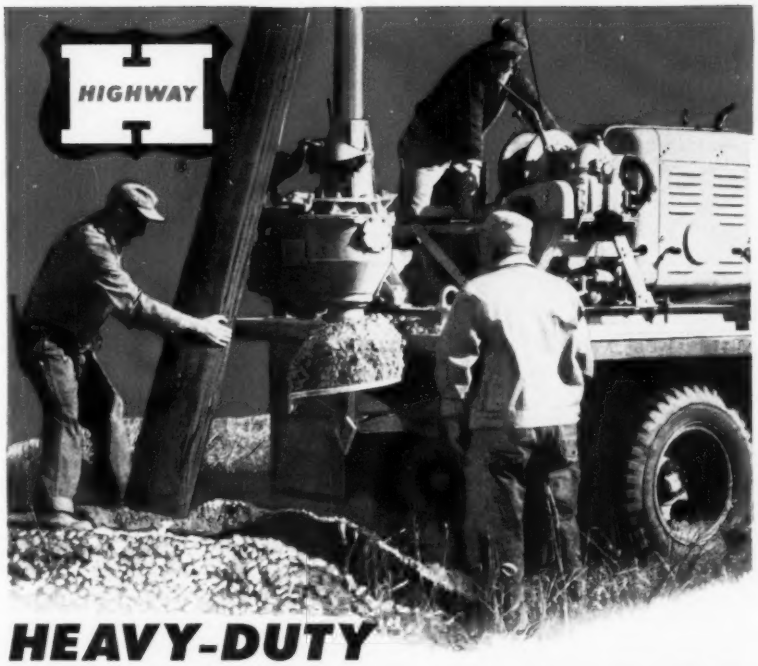
Hugh J. Tremblay has been appointed manager of marketing and sales for ITT Kellogg's communications systems department. In this capacity, he will be responsible for sales of military communication systems, both directly to the government and through common carriers or weapon system contractors.

Also announced by ITT Kellogg is the election of Nathan E. Humbrecht as assistant secretary of the company.

Hugh Tremblay has served as coordinator of communications system programs for the past three years. He has been active in SAGE (the nation's air warning system) and other defense programs, including the Atlas ICBM for which ITT Kellogg is prime contractor for ground support communications.

A graduate of Illinois Institute of Technology with a bachelor of science degree in electrical engineering, Mr. Tremblay was employed by Illinois Bell Telephone Co. as a supervisor engineer before going to ITT Kellogg, a division of International Telephone & Telegraph Corp. He served with the Army Air Force and Signal Corps in the South Pacific during World War II.

Nathan Humbrecht has been assistant general counsel for ITT Kellogg



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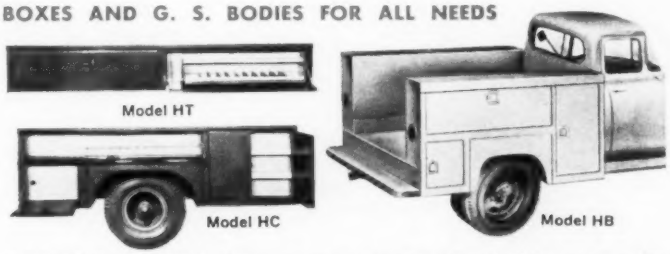

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since January 1959. He is a member of the board of directors of the University of Illinois Law Forum and a member of the city, state and national bar associations.

The new officer is a graduate of the University of Illinois, where he was awarded a doctor of jurisprudence degree. He received a bachelor of arts degree from Bradley University.

D. J. Smith Named Reliable Electric Engineering Head

Reliable Electric Co. of Franklin Park, Ill., on Nov. 11, announced the appointment of Donald J. Smith to the newly created position, director of engineering.

D. J. SMITH

Mr. Smith's background includes engineering work with the General Telephone Co. of California.

Since 1956, he has been Reliable's northwest district representative with headquarters in Seattle.

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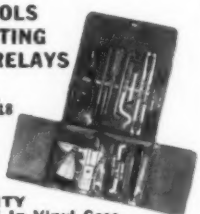

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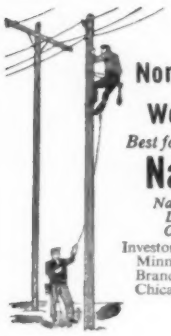

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Ramset Fastening System	—
Rawlplug Company, Inc.	—
Raytheon Company, Equipment Div.	—
Recordak Corp.	—
Rego Insulated Wire Corp.	62
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Reliable Electric Company	5
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Republic Creosoting Company	—
Reynolds Metals Company	—
Rohn Manufacturing Co.	—
Rolatape, Inc.	—
S & G Manufacturing Co.	—
Schauer Mfg. Co.	—
Seymour Smith & Son	—
Sherron Metallic Corp.	51
Sierra Electronics Corp.	—
Sloan, Cook & Lowe Co.	60
Stainless, Inc.	—
Stampings, Inc.	—
Sterile Telephone Corp.	—
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Stromberg-Carlson	2-3
Studebaker-Packard Corp.	—
Superior Cable Corporation	—
Suttle Equipment Corporation	58
Taylor-Colquitt Co., The	49
Telectric Co.	63
T.E.I. Corp.	60
Tele-Wire Supply Co., Inc.	—
Tele-Muff Co.	58
Teletype Corporation	—
Templeton, Kenly & Co.	—
Thornhill Publishing Co.	56
Transandean Associates, Inc.	—
Truck Equipment Company	—
Tudor & Yager, Inc.	60
Union Carbide Plastics Company	—
United Electric Controls Co.	—
U. S. Cable Constructors, Inc.	—
United States Instrument Corp.	65
United States Motors Corp.	—
United States Steel Corp. American Steel & Wire Co.	53
Universal Controls Corp.	—
Utilities Contracting Co.	—
Utility Equipment Co.	62
Utility Service Co., Inc.	—
Utility Tool & Body Co.	62
Warren Mfg. Co., The	—
Weikel Line Company	61
Western Electric Co.	—
Whitney-Blake Co.	—
Williams Inspection Co., Inc., A. W.	63
Wilson Rubber Company	—
Winders & Geist, Inc.	—
Wiremold Co., The	—
Wyoming Valley Equipment Div.	—
York-Hoover Corporation	—

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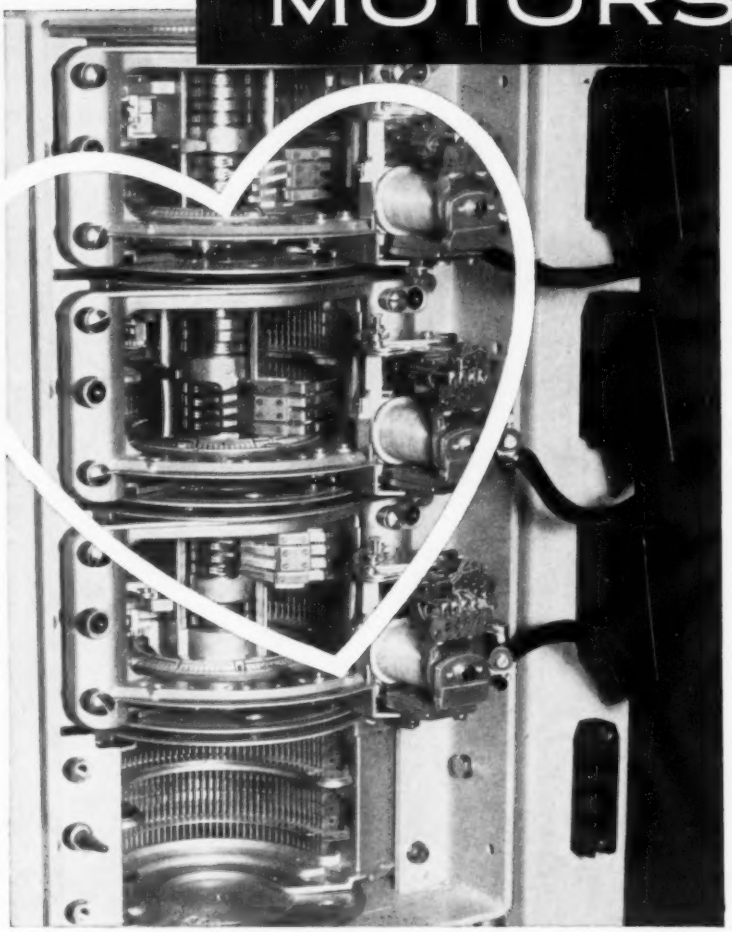
MOTORSWITCH



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Heart of the
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The Motorswitch has been proven in over a million lines of central office systems now in world-wide service . . . overwhelming evidence of its universal acceptance. Use of the USI Motorswitch enables central office systems to combine the speed and flexibility of common control systems with the simplicity of step-by-step systems.

HIGH STEPPING SPEED—Searches over a maximum of 360 contacts per second, compared to 30 to 40 on stepping switches.

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PRECIOUS-METAL TWIN WIPER CONTACTS—In talking circuits provide lowest contact resistance and maximum reliability and are used throughout the Motorswitch construction.

SOLDERLESS BANK CONTACT STRIPS—Reduce the required number of soldered connections by 90% . . . increase reliability . . . simplify regrading . . . cut the need for grading and level hunting switches.

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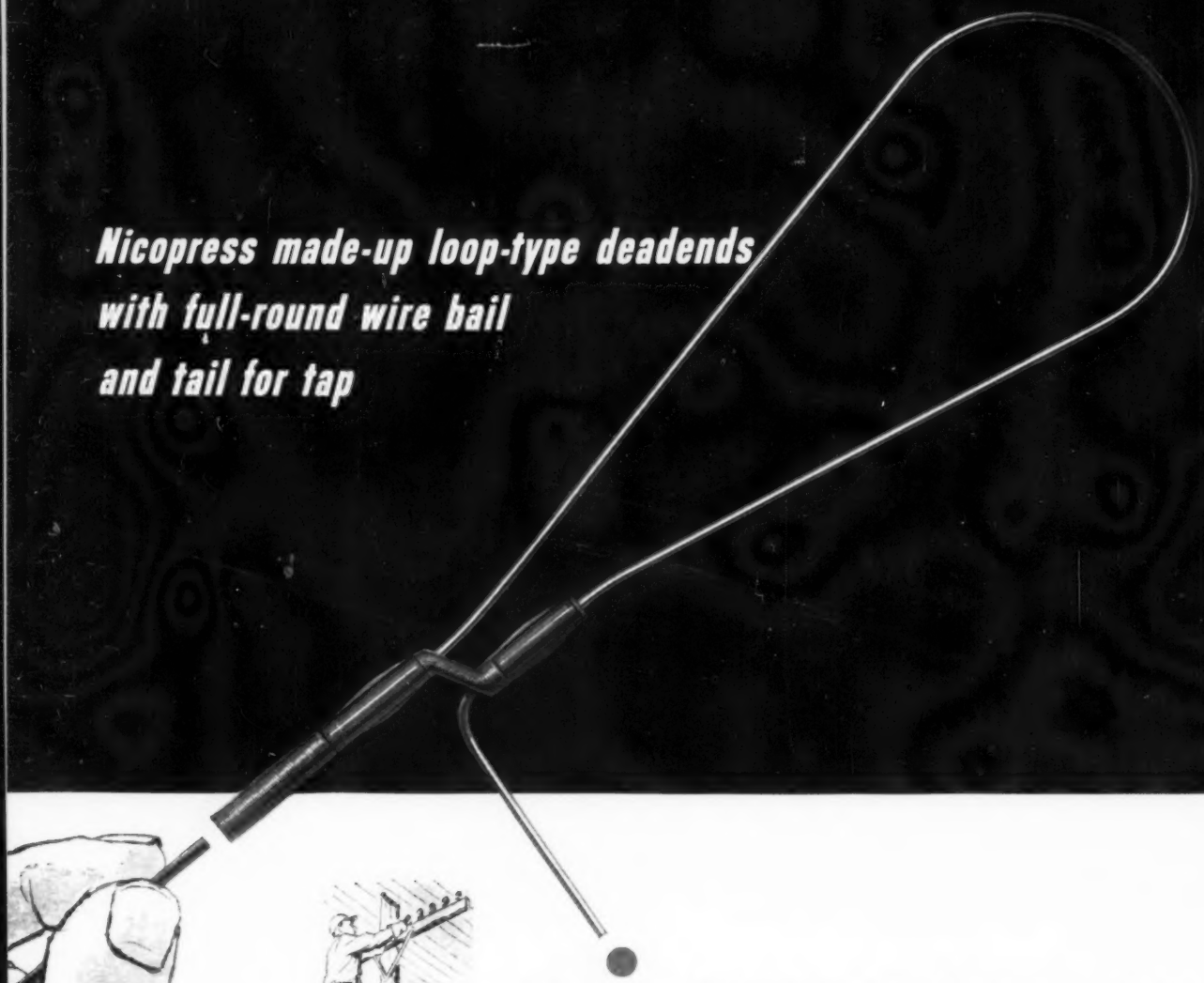
Nicopress made-up loop-type deadends with full-round wire bail and tail for tap



Place the loop of this Nicopress Deadend over the insulator...
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compress with standard Nicopress Tool...
and a uniformly-strong deadend is quickly made.

Available for copper and copperweld wires with full-round stainless steel bails; available for galvanized steel wires with full-round galvanized steel bails.

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